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Correspondence.—Wishing to make this JOURNAL a gazette of intelligent discussion to those of our readers who may wish to gain or give information on the subjects to which its columns are devoted, correspondence is solicited for publication from all who make the study of those subjects a pleasure or a profession.

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The Public Lighting Tables of the American Meter Company will be found in the page advertisement of that Company.

CONTENTS.

An Asterisk (*) denotes an illustrated article.

NOTICES—

First Annual Meeting, Iowa Gas Light Association..... 161

Wrinkle Department, Ohio Gas Light Association..... 161

EDITORIALS—

Briefly Told..... 162

The First Note in Connection with the October Meeting of the American Gas Light Association—The Trend of Improvement—Notes.

Twenty-eighth Annual Meeting, Western Gas Association—Official Report—Revised by the Secretary—Continued from page 129.... 162

Second Day, Afternoon Session—Report of the Memorial Committee—An Ideal Corporation, by Mr. N. D. Cochran—Discussion—Nomination of Officers—Address of President Elect Doty.

*Increased Use of Gas in Modern Motor Shops, by "Traveller".... 169

Economy and Efficiency in Train Lighting..... 169

External Cause of Sparking in Direct Current Machinery—Concluded from Page 132..... 171

SPECIAL ENGLISH CORRESPONDENCE..... 171

Municipal Trading—Business Prospects—The Small Manager.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES..... 172

Le Baron Leaves Alberquerque for Grand Junction—Syndicate Acquires New Plant—Temple (Tex.) to Have Gas—North End Plant, Boston, Razed—New Gas Company Organizes in Westchester County—Sunset Beach, Cal., to Have Gas—Boston Gas Sells at 95 cents—Public Service Corporation Employees Arrested—Watertown, Mass., to be Supplied with Electricity from General Electric Company's Plant—Odors from Everett Coke Plant to be Stopped—Hartford Gives Mortgage to Cover Bonds—Derby Increases Stock—Easthampton Decreases Gas Price—Northampton Ditto—Norwich Contracts for Additional Machinery—Baltimore has Cheaper Gas—Hightstown will Build Plant—Soo, Mich., to have Gas—Gunnison Appointed Chairman of Gas Commission—Borough of Penn to have Gas—Rockville to Improve Plant—Company Formed in Hartford to Operate Gas Plants in St. Lawrence County, N. Y.—Troy has to Bury Electric Wires—Lewisburg, Pa., to Improve Plant—Tonawanda (N. Y.) Gas Company Loses City Lighting—Buffalo Company Fined for Poor Gas—Berlin Extends Main System.

The Market for Gas Securities..... 174

[NOTICE.]

First Annual Meeting, Iowa Gas Association.

The first annual meeting of the Iowa Gas Association will be held at the Savery Hotel, Des Moines, Ia., commencing Wednesday, August 23, 1905.

PROGRAMME.

Wednesday, August 23.—Morning session, 10 A.M to 12:30 P.M. First regular business meeting; reports of committees; election of officers, etc. 12:30 to 2 P.M., recess for lunch. Afternoon session, 2 to 4:30 P.M. Continued business meeting of the Association. Evening, 6:30 P.M. Informal banquet at Savery Hotel.

Thursday, August 24.—Morning session, 10 A.M. to 12 M. Reading of papers and discussion of same:

"Complaints," by Mr. F. W. Kelley, Davenport, Ia.

"Ammoniacal Liquor," by Mr. F. E. Sherriff, Muscatine, Ia.

"Shop Practice," by Mr. G. I. Vincent, Engineer, Des Moines, Ia.

Other papers are being prepared, and will be noted in programme later. Members are invited to discuss freely all the points brought forth in these papers, as only the best work of the Association can be done by united effort and continued discussion. 12:30 to 2 P.M., recess for lunch. Afternoon session, 2 to 4:30 P.M. Reading of papers and discussion of same continued. Evening, 6:30 P.M. Entertainment in the evening will be provided, including trolley ride, attendance at the Ingersol Park, vaudeville performance.

Friday, August 25.—Morning session, 10 A.M. to 12:30 P.M. General business of the Association.

An opportunity will be afforded to visiting members of the Association to visit local gas works and attend the opening exercises of the State Fair on this day.

JANSEN HAINES,
Chairman Executive Committee.

Secretary and Treasurer.

[NOTICE.]

Wrinkle Department, Ohio Gas Light Association.

OHIO GAS LIGHT ASSOCIATION,
OFFICE OF THE WRINKLE DEPT.,
719 CITIZENS BUILDING,
CLEVELAND, O., June 13, 1905.

The Wrinkle Department of the Ohio Gas Light Association is now ready to receive contributions for the 1906 collection, and a sketch or description of all devices, formulæ and methods of accomplishing objects pertaining to the gas business, is respectfully solicited.

Please send a written explanation, accompanied by any sketch, photograph or drawing, to the above address, or a description alone will suffice.

Hoping to receive prompt compliance,

Yours very truly,

W. E. STERNWEDEL,
Editor.

LIBRARY OF CONGRESS, JUL 31 1905, SMITHSONIAN DEPOSIT.

BRIEFLY TOLD.

THE FIRST NOTE IN CONNECTION WITH THE OCTOBER MEETING OF THE AMERICAN ASSOCIATION.—The following news respecting the preliminaries for the October meeting of the American Association shows that its officers are up and doing: "If plans which are now being made by the Committee on Entertainment are any criterion, the coming convention of the American Gas Light Association, to be held in Milwaukee, October 18-20, will be one of tho most enjoyable gatherings in the organization's history. Milwaukee is noted far and wide as a "Convention City," but she promises to outdo herself in the reception of the gas men. As to hotel accommodations, the Plankinton House and the Hotel Pfister are both first-class hotels, and inasmuch as neither can reserve sufficient accommodations for all the visiting gas men, neither will be designated particularly as headquarters of the Association. In view of the fact that the demand for rooms will be large, it will be well for those intending to go to Milwaukee to get their reservations early. Besides the two houses named, there are a number of good lower priced hotels, full details respecting which will be given in due time. The Committee has decided upon the Hall in the Masonic Temple, one block north of the Hotel Pfister, for the meeting place. The hall is on the fourth floor of the building, has good elevator service, is quiet, light, well ventilated, and the acoustic properties are excellent. The floor will be covered with canvas, which will insure quiet. The Committee promises that every detail will be attended to, which will warrant a preeminently successful meeting.—K."

THE TREND OF IMPROVEMENT.—The general activity in the construction of new gas plants and extensive reconstruction and additions to old, which is now taking place, is suggestive to the observer of the great difference in gas machinery as built to-day and that of 20 years ago. We now have a refinement in manufacture that borders on the absolute, and the gas business no longer stands on the "hit-and-miss" principle, but is becoming, in fact, has nearly become, an absolute science. The present application of chemistry, engineering and commercialism to the problems that, where treated with common sense, show that the business can also be treated, much to its advantage, with "uncommon sense." In the selection of men to manage such an important enterprise as a gas plant, one does not hear the question, "How much must he be paid?" but "Can he get the results?" And when a man fills the bill, it will be generally found that he is a keen observer and one who uses those observations to advantage. The continuous endeavor of the gas engineer to lessen the cost of gas, simplify the machinery that produces it, and to invent new devices to accomplish these results have borne wonderful results since Murdoch first made "spirit" commercially; but the energetic gas man of to-day, busy with the detail of both the commercial and physical parts of the business, can find but little time to follow out, experiment with, and develop those germs of thought that arise from his observation of the working of his plant. Much to his credit, however, and in spite of the howl for "more dividends," he has found time for improvements, the detail of which he has wisely intrusted to his friend in this breach, the constructor of gas machinery, whose experience and ability to select materials and to fashion them to the best advantage as to cost, maintenance and effectiveness, have perfected many an embryonic idea, and so intimately do these spheres of the inventor and constructor merge into each other that it is difficult to determine to whom shall be given the greater credit for the completed improvement. This close alliance is frequently evidenced by gas men going into the construction business and *vice versa*, and this dual education and training is silently and surely benefiting the industry as a whole. It is to this team work that can be traced the vast improvements that have been made in our gas producing machinery. Brains backed by energy and money now concentrated in the gas business has created a confidence which will accomplish more in the next 20 years than in the past 20, and although we have waked up to the possibilities of the industry they are ever increasing, and to the commercial manager creating the demand, the gas engineer producing the product, and the constructor of the machinery are due the credit of creating one of the most substantial and prosperous industries in the United States.

NOTES—

THE following gentlemen have been appointed a Committee of Arrangements for the October meeting of the American Gas Light Association: Messrs. E. G. Pratt, C. H. Dickey, John Williamson, Geo. D. Roper, A. B. Eaton, D. R. Russell, R. B. Brown, H. D. Schall and B. J. Kellum. This Committee is planning well in advance for the entertainment of the convention.

THE Pawtucket (R. I.) Gas Company has offered a fair proposition for the extension of their franchise, but the public officials don't quite grasp the good treatment offered them. "Our" Billy McGregor, however, can be relied on to protect the Company's interests, and bring the matter to a successful issue.

[OFFICIAL REPORT.—REVISED BY THE SECRETARY.—CONTINUED FROM PAGE 129.]

TWENTY-EIGHTH ANNUAL MEETING, WESTERN GAS ASSOCIATION.

HELD AT CHICAGO, ILLS., IN THE AUDITORIUM HOTEL, MAY 17, 18 AND 19, 1905.

SECOND DAY—AFTERNOON SESSION.

The President—The next order of business is the

REPORT OF THE MEMORIAL COMMITTEE.

Mr. Doty—Mr. President and Fellow Members: It is my privilege as Chairman of the Memorial Committee to present to you our tributes to those members who have passed away since our meeting of 1904. Rarely in the history of the Association has the black border encircled so many names of such prominence as those we are called upon to mourn to-day.

Alpheus B. Slater, Honorary Member, died June 26, 1904.
William Henry White, Honorary Member, died July 3, 1904.
Oscar B. Weber, Associate Member, died September 16, 1904.
James Somerville, Past President, died February 13, 1905.
Charles Blodgett, Active Member, died August 25, 1904.
Charles E. Hess, Active Member, died December 22, 1904.

The President has requested that the individual members of the Committee pay the tributes to the individual members. I will ask Mr. Thomas D. Miller to respond to Mr. Alpheus B. Slater.

Mr. Alpheus B. Slater.

Mr. Miller—This duty has been thrown on to me because Mr. Shelton, who had been assigned to it, could not be here, and in saying what I do say, I can only speak from my personal knowledge and regard for the gentleman. It was in Chicago, in 1893, that I first attended a Western meeting. One of the men that I met at that meeting, who seemed to like me, and I know I liked him, was Mr. Slater. I never came in contact with him excepting at the Western Gas Association meetings. To my mind he represented what I regard as an ideal man. His generous nature, the interest he took in other people, his kind consideration for others and their feelings, were what made him the perfect gentleman. As to his career in the gas business, Mr. Shelton has written quite a biography, I understand, and mailed it here, but it has not yet reached me, and, therefore, it will have to appear in the printed pooceedings. Mr. Slater, I understand, left a legacy to his children and a memory to his friends that is the greatest that man can leave, and that is the universal respect, regard and confidence of those with whom he has come in contact. Financially, I understand, that the wealth in dollars did not amount to much, and what does that amount to anyhow? The reputation and character that he leaves behind is something that cannot be taken away, and it means all for which life is worth living.

I am very sorry indeed that I am not able to present a more creditable talk on this subject, but you can understand that the duty was thrown on me suddenly, without any preparation. I am sure that as far as I have been able to go in the matter I have expressed the sentiment of every man who knew Mr. A. B. Slater.

The following tribute to the memory of Mr. Slater, by Mr. F. H. Shelton, was received too late to be read at the meeting:

For many years, in gathering at the annual meeting of the Western Gas Association, we have been accustomed to the constant presence of A B. Slater. It seems strange not to have him with us now; and while the duty of speaking of him is a melancholy one, it yet carries with it the pleasure of a tribute of affection and esteem in which he was held by the writer, who knew him long and well.

Alpheus Brayton Slater was one of the old school, New England gas men; one of the kind who pretended not to know much of the fourth decimal place, but who *did* know how to always keep his gas works going, and his company going ahead!

Born in New England in 1832, reared and educated in it, his entire life work practically was devoted to the gas business, and in that he established a name for sturdy integrity, and commercial success and ability that marked him as one of the foremost, practical gas men in the country.

He entered the ranks early. When but 21 years old he first engaged with the Providence Gas Company, and there is no greater evidence of his worth, and year in and year out dependability, than the fact that from that date, of 1853 (and that is a long time ago, as human lives go), until his retirement but a short time ago, he steadily served that single Company, rising by degrees, until for many years he was its recognized

Engineer, Manager and practical head. Surely a life work of almost two generations is a heritage of which his sons may be proud.

Mr. Slater was one of the founders of the New England Association, and its President in 1882, 1883 and 1884; he was a founder of the Boston Guild of Gas Managers. In 1873 he joined the American Gas Light Association. Sixteen years later he was its President—in 1889. In 1902 he was fittingly made an Honorary Member.

In 1886 this Association, in honoring him by creating him an Honorary Member, honored itself; for it thus took into its ranks one liked and esteemed and respected by all.

Mr. Slater always seemed very fond of the Western Association. Rarely did he miss a meeting in so far as rested in his own power, and it needs no effort to recall his presence, linked arm and arm with Mr. Leach, his constant and faithful associate (and alas! now likewise also called across the great divide!) in the corridors of our meeting places, year after year. He often said to the writer that he looked forward to the yearly Western trip with constant pleasure; the change of scene, the things he picked up, the friendships made, and the good fellowship exchanged, abundantly repaying him for the long journey that it meant to him, from Providence, R. I.

The writer particularly remembers his cheerful presence in a party of 30 who went by steamship one year from New York to Savannah to attend a gas meeting there. On that trip he and I climbed to the cross-trees of the foremast, turned our legs around the shrouds and smoked by the hour, out of sight of land, miles from a gas works, but nevertheless swapping small talk about gas matters of common interest, the older man telling the youngster, what was what in a wholesome, lovable way that will never be forgotten.

Mr. Slater was not a great gas engineer from the extreme technical standpoint; he does not go down into American gas history as a great inventor, promoter or scientific man. But as one great in "horse sense" in practical success, in steadily building ahead and forging upward, and in the human qualities that made him liked, he was one of our best gas men. Would that he were with us still!

Mr. Doty—Mr. William McDonald, as a member of the Committee, will respond for Captain White, always graceful in manner and in speech.

Captain William Henry White.

Mr. McDonald—Mr. President and Gentlemen: When we think of Captain White we are apt, I fear, to think of him as a genial gentleman who did a great deal to amuse the members of the gas fraternity. No man, probably, that was ever among us was so capable of amusing his fellow members in the Gas Associations, and yet I have often heard the Captain himself express regret that this was true, because he seemed to feel that, to a certain greater or less extent, it took away from him the character that he really desired to have before his fellow men. And so in what few words I shall say this afternoon, I shall as far as possible, portray to you a little different thought regarding Captain William Henry White.

At the meeting of the American Gas Light Association in 1879 I became a member of that Association. Almost the first man to welcome me into the body was the Captain. From that day until the day of his death we were warm personal friends, never but once having a difference of any serious character, and that among friends is always easily settled. At the banquet of the American Gas Light Association at Philadelphia in that year, Captain White responded to a toast, "The light of other days." I presume there are quite a number of people in the room to-day, who remember that speech made by Captain White, and it was one that brought him to my notice particularly. It was a speech that was an honor to him. It had nothing of the light or frivolous in it; it was classical and intellectual—it was beautiful, so that my first impressions of Captain White were, that he was an educated gentleman who could speak in the most elegant way upon almost any subject that he undertook to speak about.

The last speech that I ever heard him make, and which a good many of you gentlemen heard, was at the meeting of the Western Gas Associatson a year ago, when he spoke of the death of General Hickenlooper. Now, if you will just pause for a moment and put together the thoughts that I have expressed, to those of you who heard his speech in Philadelphia at the beginning and the eulogy to General Hickenlooper at the end, it must give the impression that Captain White was something besides an amuser. I know him to have had a tender heart, ready at all times to help anybody that was in trouble. I know, as I said before, that he regretted he had had the name of being an amuser. He believed, as I believe, that, to a greater or less extent, a man makes a mistake to pursue a policy of that kind too far and too long, and he believed it detracted from the real manliness of character that he desired the people around him to consider he possessed. All through the years, if you will go back in your recollection, you will find the Captain was always tender-hearted. He was often asked to make a speech in remembrance of some of our fellow members, and he always did it in the most tender, the most beautiful way. If I had an ambition, one greater than another, it would be to stand here this afternoon and speak of Captain William Henry White as I have heard him speak of other men who were members of this Association. Gentlemen I hope that we will bear in our hearts towards Captain William Henry White the most kindly of recollections, because he was a man among men, a gentleman of education and polish, and desired to be in every way what I imagine a man ought to be.

Just one word more, which I think is pathetic. It is a Western expression. He died with his boots on. You know what I mean. The Captain was a sick man for a year. No one knew how sick he was or had been; but he never complained. Up to the last day that we met him he never said that he felt his time was drawing to a close, and he knew it well. He died without making any complaint, and with the good nature in which he had always lived.

Mr. Doty—I will ask another member of the Committee, Mr. John D. McIlhenny, to respond for Mr. James Somerville.

Mr. James Somerville.

Mr. McIlhenny—Mr. Chairman and Members of the Western Gas Association: It is an honor to be called upon to speak of the life of James Somerville. Death came suddenly to him, in Indianapolis, on the morning of February 13th, 1905.

He was born April 1st, 1840, near the village of Stow, on the banks of Gala Water, Scotland. At the age of 17 he entered the Greenwich Gas Works, London, under his uncle, David Hunter, the Manager, to learn the business of gas engineering. Four years later he was appointed Inspector at the Maidstone (Kent) Gas Works. At the age of 23 he was sent to Calcutta, India, where he remained 3 years, engaged in engineering work. He returned to England and was married at Maidstone.

He came to the United States in 1867 and after a few months' service with the New York Gas Company he went to Knoxville, Tenn, to rebuild and start the gas works destroyed during the Civil War. He remained as Manager of the Company at Knoxville for 10 years, and in 1877 went to Montgomery, Ala., where for 2 years he had charge of the gas works. He then became Superintendent of the Indianapolis Gas Company, a position he held until his death. He was one of the originators of the Western Gas Association and was its President in 1885. He was recognized as one of the best gas engineers in the country, and the new gas plant in Indianapolis is an evidence of his thoroughness in the profession.

He was an elder in the Fourth Presbyterian Church, a Director in the Y. M. C. A. and in the Commercial Club.

He leaves a widow and 6 children. Two of his sons are officers in gas companies, one in Chicago and one in Indianapolis.

Mr. Somerville stood high with his fellows and in his community. A local newspaper had this to say: "James Somerville was a modest, reserved and quiet man. He was exact and conscientious. Above all, he was a Scotchman, fond of the land of his birth, of its history, its legends and its poetry."

The Board of Directors of the Young Men's Christian Association, of Indianapolis, stated of him: * * * "In our long association we always found him a Christian gentleman, so uniformly genial as to make us forget his years and feel that he was full of all the youthful vigor that could inspire the youngest of our number. His loyalty to us was unfailing."

The session of the Fourth Presbyterian Church, in Indianapolis, stated: * * * "No one could be more faithful in the discharge of duty. As a clerk of the session he was a model of punctuality and diligence. His liberality was proverbial. In church and business he did with his might whatsoever his hand found to do. His memory is fragrant of good deeds."

At the special memorial service, held in the Fourth Presbyterian Church, of Indianapolis, on March 2d, 1905, the pastor of the church spoke thus: * * * "The name of James Somerville inevitably suggests character. He had high ideals and severe standards. But his ideals were not beyong the realization of those who knew him, for they could see that he was attaining them. And if his standards were severe, they were never so severe for others as they were for himself. Consciously or unconsciously many who have come within the circle of Mr. Somerville's influence have been brought to adopt higher stand-

ards of conduct and nobler ideals of right living. No one who was trying to do right ever felt uncomfortable in his presence. I never knew a man so gentle and charitable in the judgement of others."

In his connection with the Indianapolis Gas Company, extending over a period of 25 years, he was ever ready to assist and advise others in his profession. He was uniformly beloved by his employees, the humblest of whom could approach him. Every man received justice at his hands. Many of his subordinates now occupy responsible positions in gas companies throughout the country.

Mr. Somerville had all the resolution, persistency and moral courage of his race. He frowned on insincerity and held to the belief that "Character is property and an assest of commanding value both in obtaining the confidence and good will of men, as well as being a fortress of peace for himself."

At Agra in India is the world's most wonderful and magnificent mausoleum of Taj Mahal, dedicated to undying love. In the lofty dome is a wonderful echo. Voices from below ascend and roll and reverberate and come back to the hearer as one harmonious sound. Our voices raised in memory of our departed friend, James Somerville, we hope and believe will ascend higher than at the dome of Agra, to heaven itself and the echo will come back: "Well done thou good and faithful servant, enter thou into the service of thy Lord."

Mr. Doty—It is a privilege requested by one of the members of this Association, while not a member of this Committee—Mr. Berkley—to add his tribute to Mr. Somerville.

Mr. Berkley—I want to say a word, gentlemen, because I was so closely identified with him. I feel that this is the last opportunity to voice a word in praise of him who to me is head high above most men. I want to say one thing about his helping. A few years ago he left the Tabernacle Church in Indianapolis, which was within 3 squares of his own home, and went out to the Fourth Presbyterian Church, then a mission, in order that he might help it. That church has grown until it is a power in that city because of his influence in it. I know of 12 young men that have left his works, and none of them, I dare say, have lived lives but what are commendable of the efforts that he put forth in trying to help them. I thank you for the privilege of adding my testimony to this grand and noble character.

Mr. Doty—I will ask Mr. John Gribbel, a member of the Committee, to respond for Mr. Charles Blodgett.

Mr. Charles Blodgett.

Mr. Gribbel—Mr. President and Gentlemen: It is very meet that we who still move in the market places of life should pause a moment amid the traffickings to record the regard in which we hold the memory of those our fellows beloved, who have in silent caravan gone from us forever, leaving with us the gear and store of their living. With bared heads and tender hearts we set down the affection in which we held them and light the lamp of memory, that those who follow may know the pattern of the men they succed and these our friends so continue to enrich human lives. To those who knew him well the name of Charles W. Blodgett will ever be as the chimes of silver bells.

He was born June 2, 1851, in Providence, R. I.

After his graduation at the College of the City of New York he entered the service of the Williamsburgh Gas Light Company, of Brooklyn, as assistant to his father, Charles F. Blodgett, who was the Secretary of the Company from its incorporation until his death, covering a period of 35 years.

The son succeeded his father as Secretary in 1881. Some years later the manufacturing plant was also placed under his direction. The prosperity of the Williamsburgh Company under his direction was marked. While preserving his relation to the Williamsburgh Company, in 1890 Mr. Blodgett was appointed General Manager of the Brooklyn Gas Light Company, and later on elected its Vice-President. His labors were continued in both Companies until, on the consolidation of the several Companies in the city of Brooklyn, he was made Manager of the Williamsburgh district of the Brooklyn Union Gas Company. In this office he continued until 1901. He then went to the Providence (R. I) Gas Company, as Superintendent, where he stayed until July 1902, when indications of the disease appeared which caused his death on August 25th, 1904.

Coming of a line on his father's side, identified with the early history of New England, and on his mother's side from a stock which shared the glory and chivalry of the South, he embodied in himself, in an unusual measure, the characteristics of his ancestors.

His energy was as marked as his generosity. His tenacity of purpose was equalled by his vivacity. The solidity of his judgment was in no manner shaken by his rare quality of humor and his keen perception and analytical power were accompanied by a warm heartedness that made them welcome wherever he was known.

He was positive, but open to conviction. His devotion to truth was impassioned and equalled by the modesty with which he hid his personality. His capacity for friendship was rare and those of us who knew him best will cherish golden memories of it. In all his relations with his fellows he was moved by fidelity to a high ideal. Friendship with him was born of the heart and life brought him no fairer fruit. Life to him was real, intense, practical, but not confined within these limitations. With him success was to be measured by achievement rather than by acquisition. In his scales "kind hearts" were "more than coronets and simple faith than Norman blood," and Manhood was the real gold of Ophir. With all the sensitiveness of womanhood he combined a sturdiness and practicability which made him beloved, admired and respected in equal degrees.

He held the Western Gas Light Association, which he joined in 1890, in high regard. Some of us will long remember the positiveness with which he expressed his admiration of the spirit which moved this Association. He was outspoken in his admiration of its enterprise, its grasp upon the problems of our business, and the comraderie existing among its members.

His record in our business as gas manager is one to be studied by the younger men who are to follow us and the quality of his manhood was such that his associates will forever cherish his memory.

Mr. Doty—I will ask Mr. George Clark to speak for Mr. Charles E. Hess.

Mr. Charles Emil Hess.

Mr. George Clark—Gentlemen, Charles Emil Hess was born in Hesse-Darmstadt, Germany, in 1839. At the age of 15 he came to America and located with his brother in St. Charles, Mo., where he engaged in a mercantile business, drifting from there to St. Louis and later to Phelps county, Mo., where he remained until the outbreak of the Civil War, when he returned to St. Charles. He enlisted in the Union Army. At the close of the rebellion he read law in the office of the Hon. A. Krekel, and later attended the Harvard Law School, from which he graduated in 1886. He engaged in the practice of law in St. Charles until his appointment as Registrar of Bankruptcy for the Western District of Missouri, which necessitated his removal to Jefferson City. After the expiration of the bankruptcy act he became interested in the Jefferson City Gas Light Company, which later merged into the Light, Heat and Power Company of that city, and for nearly 23 years he was identified with that corporation, until his death on December 22d, 1904.

Mr. Hess was a man of sterling integrity, a good citizen, observing a strict devotion to business, humane and just, a great lover of nature, and possessed of a wide range of culture. In every relation of life he was a true and honorable man.

Mr. Oscar B. Weber.

Mr. Doty—To some, death comes like sleep at the close of a busy day, but to one it came at noon's high tide, and for him your President has asked me to give something more than a passing notice.

Oscar B. Weber was a New Yorker by birth and education. He was born in New York city, August 6th, 1859, and was graduated from the College of the City of New York in 1880. His business experience began with his father, Adam Weber, one of the first to manufacture fireclay retorts in this country, and who has been prominently identified with gas interests for more than half a century. The name of Weber has long been an honored one in the gas industry. Upon the retirement of Adam Weber from active business life in 1890, Oscar Weber became President of the Company known as Adam Weber's Sons.

The large, model plant erected at Weber, N. J., in 1891, is a monument to the importance of the manufacturing industry he represented. The nature of this product brought the Company, and Oscar Weber as its representative, into business relations with many of the gas companies and their officers, and to some the relations were intimate, and to those perhaps more fully is known the loss sustained in his premature death.

Mr. Weber was a member of the American Gas Light Association and of the Pacific Coast Gas Association, as well as of the Westerd Gas Association, and was faithful in his attendance at the various conventions and responsive to their varying demands, and I think we all felt a convention without him, left a vacant chair. He was full of good fellowship, with a personality strong and vigorous, and though it was understood that he was not well when attending our meeting of last year, yet to one of his temperament, disease seemed like a garment, lightly worn, to be thrown aside to-day, to-morrow. Who would have

dreamed then that his summons had come? We who were fortunate enough to be the companions of his leisure, will recall again and again the marvel of his musical accomplishment. His was no ordinary talent, whipped to expression by a master's training, but a free gift from nature, as spontaneous as the song of a woodland bird, withal a perfect co-ordination of hand and brain to deliver, to interpret the master's meaning.

The President—Gentlemen, I think that we all feel that these few minutes devoted to the memory of our dead are well spent, and that we can pause in the transaction of our business to remember those that have gone before and whom we will surely follow. We will now listen to a paper by Mr. N. D. Cochran, of Toledo, O., on

AN IDEAL CORPORATION.

Mr. President and Gentlemen: Before starting to read the paper I desire to say that I have no special knowledge of the gas business, and am not here to try to tell you anything about it. What I shall say on the subject of corporations will be with reference to corporations in general.

The best thing that can be said of this century is that, more than ever before, the ideal of the people is universal peace, and that means the organization of the world. The universal demand is that nations quit fighting and settle their differences by peaceful arbitration.

Reduced to commercial terms, that means that competition between governments must cease, and co-operation take its place. The universal government trust, if you please—the United States of the world.

That is the ideal terrestral corporation, for it could be the *whole thing* organized. But first there must be organizations of the part. And each individual's task is to do what he can to organize his part, to establish the right relation between himself and the universe.

There is an ideal relation between you and your wife, your child, your friend, your neighbor, your community, your State, your country, your world, your universe. At one time or another the average man is at war in some degree with all of them. When he is at peace with them all that's the millenium.

The whole thing is made up of related parts or facts. There is the religious fact, and Christianity, Judaism, Mohammedanism and Confucianism are opinions as to what the religious fact really is. When we find *the* fact there will be one religion. It was only this week that John D. Rockefeller suggested the religious trust, although the Congress of Religions at Chicago in 1894 pointed to the same thing.

There is the language fact, of which English, German, French, Russian and Japanese are but opinions. Yet commerce is forcing the language merger every minute. The locomotive, steamship and electric wire are weaving the people of the earth together. Commerce demands one langau ge.

There is the credit fact, of which Dunn's and Bradstreet's are but competing opinions. Neither is wholly right, or both couldn't exist. You buy both guesses and then take a guess on your own account.

There is the oil fact, which has more nearly arrived than any other industrial fact, for competition has been almost entirely eliminated throughout the world. And it is possible that future generations may forget the small dealers Rockefeller crushed, in his war to eliminate competition and organize oil, and give him some credit as the rough-house apostle of oil peace. Men may think more *then* on the result, and less on how it was accomplished.

Oyama is killing thousands of Russians and desolating many homes. But we think the sacrifice is made for universal peace and Oyama is a hero.

On the political government side the most interesting progress is being made towards the universal post office. It is interesting to note in this connection that the private express company money order is well nigh universal. The U. S. post office money order is not.

One of the most interesting American facts is the railroad fact. Once every road was a seperate corporation, or opinion. Competition, or war, taught its lesson and the railroads got together in groups. The wars of these groups between themselves and the public, or government, will compel railroad peace. Competition is responsible for rebates, drawbacks, passes and other special priviliges. Organization and peace will eliminate them.

Just how railroad peace will come remains for the future to reveal, but if each step toward better organization be orderly we need not worry about what the ultimate will be. But the war has gone far enough to demonstrate that the organization is not complete when relations between railroad employers and employees have been adjusted. The railroads have their wars with labor, and great progess has been made toward peace, so far as that particular relation is concerned.

But there is a third interest. The war now on is between the railroad organ—all the railroads—and the other parts of our social, commercial and industrial organism. That means that a right relation must be established between this one part and the whole. There can be no peace until everybody is protected from the possibility of the arbitrary and unjust exercise of great power by anybody.

I have placed emphasis on the railroad relation because of the peculiar interest it has to the particular class to which this paper is addressed. All of the so-called public service corporations now face the same problem. Not only must the right relation between employer and employee be established, but the right relation between them as a harmonious corporation and all other interests—the remainder of the people, the general public—must be established also.

I have read with much interest that part of the proceedings of the Congress of Gas Associaiions of America at St. Louis last year which concerned the relation of gas companies and employees. The discussion which followed the presentation of the experience of Sir George Livesey and the South Metropolitan Gas Company, of London, in profit sharing with employees, indicated a disposition on the part of some American gas managers to bring about a more equitable and satisfactory relation between employer ahd employee in this country. It indicated also that there is not so much greed and narrow selfishness in the ownership and management of some of our public service corporations as many of us have been led to believe; and that there is a growing demand for peace in the gas business.

It indicated even more than that. It indicated that some corporations are developing a soul; for at least three of the gas men who discussed the paper made specific mention of the Golden Rule, and in connection with the gas business.

So far, so good. When employers go earnestly hunting for an ideal relation with employees they will improve conditions, even though they don't reach the ideal all at once. And having established a better relation with employees, they will then be in better position to establish a better relation with the public.

And the war is on now. Competition taught gas men that two gas companies in one community were just as absurd as two post offices. Once they got that wise there was better organization. But the same mistake was made in some communities that other industrial organizers made. Complaint has been made in some instances, where public service corporations were recognized, that values were inflated and capitalization watered.

Against that the public has declared war. There is a demand for so-called municipal ownership, that will grow in proportion as the public service companies get out of relation with the public. Before this war is fought out there must be more organization—the water must be organized out of the capitalization and public confidence organized in.

The growing demand for municipal ownership isn't because the public crave it as a beverage, but rather because they feel that some sort of emetic or cathartic is needed to establish better social health. It is a war measure. Like all wars this one will be educational, and more progress will be made toward peace.

This is an opinion, of course. It is not expressed in the spirit of captious or hostile criticism, but rather in the hope that it may help in some measure to bring about gas peace.

Resistance is a great thing when it is right. Protest has worked wonders in organizing the world. The best thing now happening in the industrial world to both labor and capital is the resisiance offered by each to the encroachments of the other. Resistance makes you stop, look and listen. When you start wrong it helps you to back up and start right.

Believing in organization, I believe in unionism. I believe in the corporation and in the labor union. Instead of too much organization there is not enough. A big, strong man, chesty with conceit and power, may thump his weak and puny neighbor, but he is more apt to shake hands with a fellow of his size and give him a square deal. Right organization means a square deal for everybody.

That's what all this row in Chicago is about. The employers and employees in one special industry went to war, and others thought it could be fought out in that one spot. But they overlooked the intimate relation of parts of organized society to each other and the whole, and finally the entire community was in it. You can't rob Peter to pay Paul. And you can't hurt Peter without hurting Paul, and yourself also.

In the war right here in Chicago one of the most significant developments is the palpable inefficiency of municipal government. It has failed to govern. The political government has been unable to adjust the relation botween industrial classes. Hence Chicago cannot be

called an ideal municipal corporation, although I think it is one of the most progressive municipalities in this country.

In a general way this paper has pointed to more than one ideal corporation, although time will not permit the working out of any of them in all its details. I will attempt to point out, however, the dim outlines of the ideal municipal corporation, and with that leave the rest to your imagination.

I believe first of all that our so called representative government is a failure simply because it is not truly representative. Society is industrial, commercial and social, but its government is political. The community is made up of bankers, manufacturers, clerks, merchants, bookkeepers, skilled mechanics, laborers and others who do something useful to earn a living, but when they come to select their representatives they choose from Democrats or Republicans. And neither of these seems to have any real relation to everyday life.

In many municipalities the representatives represent those who will pay the highest price for representation, and they are generally the seekers for special privileges.

The subdivision of a municipality into wards is purely arbitrary and geographical. No ward representative can know what he really does represent, except his own aims and ambitions. The community isn't organized. It is merely divided into wards, and all kinds of people into Democrats and Republicans.

Everywhere we find dissatisfaction with this kind of government. Where shall we turn for something better?

While politicians and statesmen are tied down by precedent tradition and superstition, commerce is evolving the new government right under their noses. The fierce war between capital and labor is a war of conflicting opinions, a fight for better government that will regulate the relation of individuals and classes, and insure to every man the right to do as he pleases as long as he does not interfere with the right of every other man to do the same thing. We find this same war going on in every class interest, this same cruel, disastrous yet educational and peace-compelling war. But everywhere there appears to be a tendency on the part of men to get together in p ace and harmony as rapidly as they can intelligently adjust relations. There is a tendency to get together in classes—not the old classes to which membership was attained through wealth or the accident of birth—but classes in which membership is determined by special knowledge, fitness and enlightened self-interest.

There was a time when every State in this Union was an individual opinion. It took war to weld them together. Many thousands of precious lives and many millions of treasure were sacrificed, but the result was good. We have seen the gradual organization of them all into oue great, harmonious union, each reserving the right to develop its best individuality, but a supreme human intelligence governing and regulating the relations of each to every other and to the whole.

We boast of this representative government as a vast improvement over the monarchical form. Yet it seems that commerce is evolving a government that will be a vaster improvement over the so-called democratic republic than that was over the absolute monarchy.

So much for the general proposition. Let us take up the relation of the lighting industry to the public. That brings us to the ideal municipal corporation and the government fact.

This Association is but one of the many evolving from the same principle. You are moving toward the nationalization of the lighting industry. You are working toward a supreme governing gas intelligence, without a sacrifice of the individuality of the constituent corporations. This supreme gas intelligence will be a great clearing house of gas facts and information. Each member will help every other.

Let us suppose the gas light industry in a city organized to its highest possible development. It is one industrial organ of a social and industrial organism. Then let us take every other organ and nurse that to its highest development. We will have then the street railway or transportation organ, the banking or credit organ, with the banking system unified as the post office is, the Central Labor Union, the health organ and the organ of food, clothing, shelter (landlords), tenants, builders, breweries, saloons, religious, charitable, correctional and reformatory, fire, police, public service, public safety, retailers, publicity, advertisers, etc.

Then let us suppose that each industrial class, or interest, or organ, elects its best representatives to a central clearing house, the supreme intelligence, the governor of relations between the organs, or interests and individuals. Does not that mean government of the real best people, and by developing each class interest to its highest, develop the social whole to its highest and best? Would we not have then a community governed by organized intelligence, an industrial democracy?

I offer this as a government that would be better for the community than public ownership under existing forms of governments, and better for private ownership that is honest and wants to oarn money by intelligent operation and management of its industry. And no book or legislative laws would be necessary to put it into effect. It would be a law unto itself and automatically control government from the jump; for every member of the governing body would be a real representative of his class interest. Each class interest could be, and would be, given the greatest possible liberty consistent with the rights of all. And the relations of all would be regulated by the hightest intelligence in the community.

It would be the department store with every department in charge of an expert, and all heads of departments constituting the supreme intelligence, as against a general store not divided into departments but every clerk a jack-of-all-trades. And that is what our government is now.

Under public ownership, as now advocated, it is intended that the butcher, the baker, the candle stick maker and the banker, the sewer digger and everybody else, shall select the management of the gas company, the street railway company, etc. Under private ownership we have the abuses of watered bonds and stocks, and gigantic grafting that not only keeps up constant warfare with the people but interferes with the scientific operation of the plant.

Private ownership, unregulated except by the promoter's greed, is wrong. If it were right this outcry wouldn't be heard. But the people begin to realize that there are other ways of paying taxes than to the elected treasurer. They begin to see that their gas bills and their street railway fares are taxes. And they will not forever submit to taxation levied to pay interest on watered bonds or dividends on watered stock.

Discussion.

The President—Gentlemen, we have listened to a very eloquent and earnest paper on "An Ideal Corporation." Mr. Cochran's idea seems to be that but one corporation should exist. If that condition could prevail, the conditions would certainly be extremely ideal, and we would all be employees of a corporation. All the associations which we attend would lose much of their individuality. I would like to hear a little discussion on the subject.

Mr. Doty—Mr. President, I think that the Western Gas Association can congratulate itself upon having had the opportunity of listening to the address delivered by Mr. Cochran. Mr. Cochran is a newspaper man. I believe he would value that title higher than he does the fact that he is the editor of one of the most prominent newspapers in this country. You see he is a man of great courage, as is evidenced by the fact that he would actually come before an assembly of gas men; but you see, Mr. Cochran, they are not such a bad lot of men, and these men do have ideals, and these men, as I know many of them personally, stand for what you have expressed, and what President Roosevelt has expressed, as a square deal. We do want a square deal. We believe in education. We believe that the strength of our companies, the security of our investment, depends upon closer relations—ideal relations, if it were possible, with our consumers. I believe I express the sentiment of gas men when I say that we desire nothing better than a close, intimate understanding of our relations to the public and the relations of the public to us. The obligation is mutual. We invest our money in an attempt to supply the public with a necessity, and for that investment all we ask is a square deal. Now, I consider that Mr. Cochran's address marks an epoch in gas association work. I think that when we haue the opportunity of reading Mr. Cochran's address at our homes, in our moments of leisure, and have the opportunity of pondering, studying and reflecting upon the truths that he has advanced, we will feel very grateful indeed that he has spared a few moments of his very busy time in coming to Chicago and taking part in our deliberations. (Applause.)

The President—Will some other gentleman speak on this subject? It has been a very interesting paper, and we would like to have a free discussion. Mr. Cochran seems to have covered the subject so completely that it cannot be discussed. I would ask him if he wishes to make any further remarks.

Mr. Cochran—Mr. President, I would just like to say a word in conclusion. First of all, I want to thank this body of men for the opportunity to address them. I agree with what Mr. Doty has said, and if it was not a body of intelligent, representative men there certainly would be no satisfaction in coming to Chicago to talk to them. No man could get any satisfaction out of talking to a lot of wooden Indians. If he has got anything in his head that he thinks is worth saying, he likes to say it to men who have the intelligence to appreciate it if it is good, and to knock it down if it is bad. I can remember that when I was very young in the newspaper business I thought my

special mission in life was to knock down every head that stuck itself up in front of me in opposition. As I grew older I found that every individual with whom I came in contact generally had a whole lot more good in him than bad. I believe that agitation such as these discussions will do much to bring a better understanding between people who are fighting now. There is fighting to a certain extent between the public and the corporations. It may be said that on a lot of these things you know a whole lot more about it than we do, and we may be wrong—I am speaking now from the other side—but the way to do is to convince us. We are always ready to be convinced. I believe the great majority of men are fair; they want to be fair. I believe in war to a certain extent, because when people fight they get tired of it sooner or later, and it generally convinces. If a man gets a good licking, he thinks twice before he goes into another fight. I believe that we are evolving all the time a better condition. I believe we are working towards a situation that means peace between corporations and the public. The people don't stop to think that they are a corporation themselves. While I am speaking from the outside, I am one of the greatest enthusiasts about corporations that there ever was, because if I could I would organize everybody on the face of the earth into one harmonious fraternal organization. (Applause.)

Mr. Doty—I move, Mr. President, that the thanks of the Association be tendered to Mr. Cochran for his very valuable and very able address. (The motion was seconded and adopted.)

The President—Mr. Cochran, it gives me great pleasure to thank you, in behalf of this Association, for your very able paper. Gentlemen, the next order of business is the election of officers for the ensuing year. Nominations are now in order. The first office to be filled is that of President.

NOMINATION OF OFFICERS.

Mr. McDonald—I nominate Mr. Doty.

Mr. Miller—I second the nomination, Mr. President.

The President—Any further nominations?

Mr. Howard—Mr. President, I would move that the Secretary be authorized to cast the vote for Mr. Doty as President of this Association. (The motion was seconded and adopted.)

The Secretary—Mr. President and Gentlemen, in accordance with your instructions I cast the unanimous vote of the members assembled for Mr. Paul Doty to serve as President for the ensuing year. (Applause and cries of "Speech.")

ADDRESS OF PRESIDENT-ELECT DOTY.

Fellow Members of the Western Gas Association: This is not an extemporaneous speech. I feel very deeply. You have by your votes elected me President of your Association—our Association—for the coming year. I am deeply appreciative of this mark of your esteem. It makes my heart beat a little faster; it makes the blood course through my veins a little more quickly. I thank you sincerely for the confidence you have manifested and I pledge my services for the whole welfare and good of our Association.

I feel I should make this an occasion for a heart-to-heart talk, something more than a perfunctory expression of my thanks. You have given me your votes. I want something more than your votes. I want your brains, your hearts, to make my administration a success. I appeal for your whole support. Do not make the Presidency an empty honor. Do not envy me that honor. I know full well that each added duty brings an added responsibility, but I welcome the duty as an opportunity of great value. You must join with me in making the most value of the opportunity. I appreciate, you know, that the great man in the world's work to-day is the co-operative man, the man who sees clearly the right thing to be accomplished and is willing to sink his individuality to accomplish it; the man who is more inlerested in getting the work done than he is in getting credit for doing it. I think I am right in claiming that the spirit of the Western Gas Association is the spirit of co-operation. Its members are co-orerative members. Its policy is democratic. Its government, as I understand democratic to mean, is of the members, by the members, and for the members. This being true, the opportunity to do effective work is yours as well as mine.

If you will refer to the By-Laws of the Constitution, Article IV., Duties of Officers, Section 1, you will read that "The President shall also choose subjects and select authors for the papers which shall be presented for the consideration of the Association at its next annual meeting." It is my duty therefore to present subjects to you, and your duty to consider these subjects for the papers to be presented at the next annual meeting. Let it be understood if we do our full duty to the Association our work for next year begins now, and not a few weeks before the next meeting. An American characteristic is preparedness. This being true it will only be necessary for me to give passing mention to the necessity for an early campaign for 1906. But do not forget that I say the campaign begins this minute. The command now is "Attention." At the close of this meeting it will be "Forward—March."

I have here the card index of "Current Gas Literature" as published by "Progressive Age." I have had a list made of the number of papers indexed under the following subjects. The Index has been carried on for but a little over 2 years and you will be surprised no doubt as I was, to know that already there are over 2,940 references to over 229 subjects. I will not read all the subjects, but will incorporate them in the proceedings, and you will I believe be proud to know our industry is so active in technical work and literature.

Progressive Age Index.

Accounting, 25.
Accidents, 9.
Acetone, 1.
Acetylene, 84.
Addresses, 51.
Advertising, 14.
Air, 11.
Ammonia, 28.
Analysis, 29.
Appar. at St. Louis, 1.
Appliance, 11.
Asphalt, 1.
Asphyxiation, 8.
Associations, 53.
Benches, 16.
Benzine, 1.
Bills, 4.
Boilers, 7.
Book reveiw, 3.
Boston gas, 1.
Brick, 2.
Briquette, 7.
Building, 1.
Burners, 6.
Business, 13.
By products, 7.
By prod. coke oven, 21.
Calorimeter, 16.
Calorific power, 4.
Candle power, 12.
Capital, 2.
Carbide, 2.
Carbonization, 13.
Carbon monoxide, 5.
Carburetting, 10.
Cement, 22.
Central stations, 4.
Chemistry, 2.
Chimney, 2.
China, 1.
Clay, 1.
Coal, 61.
Coal gas, 13.
Coke, 38.
Coke ovens, 9.
Combination, 7.
Combustion, 14.
Compilation, 1.
Complaints, 1.
Compression, 1.
Concrete, 26.
Condensation, 4.
Consolidation, 3.
Construction,
Consumers, 5.
Consumption, 6.
Contracts, 2.
Contractors, 1.
Conveyor, 1.
Cooking, 3.
Correspondence, 1.
Cost data, 3.
Curves, 2.
Cyanides, 17.
Cyanogen, 6.
Depreciation, 6.
Distillation,
Distribution, 37.
Drafting, 3.
Draught, 1.
Drips, 1.
Earnings, 1.
Education, 54.
Electric, 48.
Electrolysis, 28.
Employees, 24.
Engines, gas or oil, 199.
Engineering, 14.
Enrichment, 6.
Ethics, 1.
Excavating, 2.
Exhausters, 2.
Exhibition, 3..
Experience, 2.
Explosion, 10.
Exposition, 3.
Extensions, 2.
Fans, 11.
Filing, 1.
Financial, 13.
Fire, 8.
Firebrick, 3.
Fixtures, 3.
Fitting, 4.
Flames, 1.
Flow of air and gas, 13.
Flue, 1.
Formulæ, 1.
Foundations, 1.
Franchise, 6.
Fritz, J. (medal), 1.
Fuel, 31.
Furnaces, 3.
Gauge, 2.
Gas, 3.
Gasoline, 1.
Governors.
Graphite, 1.
Gravity, 1.
Handling, 2.
Hazard, 3.
Heat, 30.
Heating, 37.
Historical, 15.
Hoisting, 3.
Holder, 14.
Humphreys, 4.
Hydraulic, 1.
Hydrogen, 2.
Hygiene, 9.
Illumination, 19.
Incandescent, 61.
Index, 12.
Industry, 6.
Inspection, 5.
Invention, 2.
Iron, 1.
Journals, 1.
Labor, 28.
Lamps, 27.
Leakage, 19.
Legal decision, 6.
Legislation, 2.
Lighting, 141.
Loss, bad debts, 1.
Lowe, new oven, 1.
Lutes, 3.
Mains, 16.
Maintenance, 1.
Management, 16.
Mantles, 55.
Mass. Bd. Comrs, 1.
Manufacture, 3.
Measures, metric, 1.
Mediocrity, 1.
Mechan. handling, 22.
Meters, 49.
Methane, 1.
Mineral prof., etc., 2.
Mixer, gas, 1-
Mixture of gases, 1.
Moisture in air, 1.
Monazite, 6.
Municipal, 36.
Naphthaline, 20.
Natural gas, 21.
Nernst lamps, 12.
Obituary, 4.
Oil, 58.
Osmium lamp, 6.
Oxygen, 1.
Paint, 8.
Paper, 1.
Paris, France, 12.
Patents, 1.
Paving, 3.
Petroleum, 2.
Philadelphia, 1.
Photometer, 89.
Photography, 1.
Piles, 1.
Pipe, 35.
Power, 18.
Pressure, 20.
Presidents, 1.
Prices, 14.
Producer, 44.
Progress, 4.
Pumps, 6.
Purification, 56.
Pyrometer, 10.
Question Box, 8.
Radium, 1.
Regulation, 5.
Retorts, 110.
Research, 1.
Residuals, 1.
Review, 3.
Roof trusses, 1.
Rope, wire, 2.
Rust, 3.
Sandblast, 2.
Scrubber, 13.
Separator, 5.
Service, 1.
Smoke, 7.
Specific heat gravity, 2.
Specifications, 4.
Standpipes, 1.
Standards, 3.
Statistics, 31.
Steam, 65.
Steel, 3.
Strike, 1.
Stoves, 22.
Sulphur, 14.
Tanks, 1.
Tar, 41.
Taxation, 4.
Telephones, 1.
Temperature, 28.
Testing, 2.
Thorium, 1.
Transporting, 1.
Trenches, 1.
Tunnels, 1.
Turbine, 7.
Vapors, 1.
Vegetation, 1.
Ventilation, 4.
Washer, 1.
Water, 1.
Water gas, 85.
Water power, 1.
Wind (pressure), 2.
Wood, 1.
Works, 133.
Wrinkle, 4.
Writing, 1.

I have also made an analysis of subjects in the 1905 issue of the Question Box of the Ohio Gas Light Association. You will agree with me that the work of our sister association is worthy of our praise and commendation. I look upon it this year as a barometer of the gas industry. It shows the range of pressure and where we can find the interests of our associates. There are 567 questions asked, or subjects introduced under 18 heads as follows:

List of Subjects.

1. Gas making materials, 15.
2. Manufacturing equipment, 50.
3. Manufacturing operation, 96.
4. Residuals, 30.
5. Manufacturing chemistry and physics, 41.
6. Storage, 7.
7. Distribution supplies and material, 13.
8. Distribution operation, 41.
9. Chemistry and physics (other than manufacturing), 52.
10. Gas engines, 81.
11. Gas burning appliances (other than engines), 63.
12. New business methods, 19.
13. Collections and dealings with consumers, 9.
14. Accounting (other than collection), 4.
15. Management, 22.
16. Legal matters, 3.
17. Literature, 7.
18. Miscellaneous, 14.

Unanswered.

11. Is gilsonite or similar material used as an enricher?

53. How many installations of direct fired benches are there in America? Where are they?

97. Why are not coal gas retorts molded under high pressure, similar to making retorts for zinc distillation?

177. Can anyone give an actual experience with isolated generators in relation to coal gas bench work?

220. Other conditions being the same, CO is formed more readily above atmospheric pressure, rather than below it. What conditions determine the thermal efficiency that may be attained by working water gas generators under increased static head while maintaining differential pressures as at present?

225. Has the question of a standard candle power ever been discussed at any gas meeting, and with what results?

640. How much will damp air affect the heating quality of gas in a blast furnace?

651. Have you ever calculated the chimney draft by formula, and checked with actual observations by thermometer and draft gauge? Give your figures.

1,002. What proportionate relation should the pay roll bear to the net sales of gas appliances under the conditions specified in question No. 1,001? (Sales, $60,000 or less.)

1,157. What are the best dozen papers in the technology of gas that have appeared in the gas journals or association proceedings to be recommended to a man who has newly entered the gas business?

856. What is the best type of an aspirator and what is the efficiency? What air pressure does it take to overcome a certain back pressure in mixing chamber (say 7 inches) for different mixtures of gas and air?

Incomplete Answers.

86. Why do we not pay more attention to vapor tensions in designing coal gas condensing systems?

98. Has experience with vertical retorts to date been satisfactory or otherwise?

569. What is the actual cost of maintenance per lamp per year in street lighting system, using single burner Welsbach gas lamps, including interest depreciation and fuel, where artificial gas is used at $1 per M.?

578. What are the different arrangements for tapping services; also the pressure reducing arrangements on high pressure main, say, 50 lbs.?

859. Is there any material, having greater heat conductivity than firebrick, which could be used for muffles, etc., for small industrial furnaces?

1,061. Has anyone tried to apply the Taylor system of shop management to gas operations.

1,151. In the interests of a better index, what criticisms can be offered in the card index sent out by the Western Gas Association.

1,155. Where can authorative tables be found giving the temperatures under which petroleum and its many distillates become permanently fixed gases?

Difference of Opinion.

64. Why do we use such large retorts for such small charges?

70. Which form of oil spray for a double superheater carburetted water gas apparatus is the best, an injector at the head of the carburetter with no steam and under pump pressure of about 20 pounds, or an oil burner type at the head of the generator with steam directed at the connection between the carburetter and generator?

84. Is a cement floor preferable to an iron floor for the charging stage of a retort house?

95. What are the advantages of "through" retorts.

152. Is it good practice to mix coal gas with water gas in a water gas relief holder?

190. What are the arguments for a thin charge of coal in the retort, and how do these stand in the face of practical carbonization of coal in by-product ovens?

203. In water gas practice, is it desirable to use more wash water than an amount necessary to maintain seal and carry off tar?

221. What is the effect of heating the oil on gas and gas making, using Texas gas oil, 27° gravity? What temperature gives the best results?

451. What is the best holder paint? Has graphite paint any advantage over red lead paint?

602. Is there any difference, and if so, what, between the amount of flow of a jet of gas lighted and unlighted?

604. An increase in temperature of either air or gas, or both, before being burnt, gives a flame lower in temperature than if colder gas and air are burnt, other things being equal. Do you think this statement is correct?

605. In combustion, which has the oxygen the greater affinity for, the carbon or hydrogen?

832, Have any gas companies had experience with aluminum tips? How do they compare with the old lava or steatite tips?

You will note the greatest interest is in the "Manufacturing Operation," 96 questions, closely followed by "Gas Engines," 81 questions, and the least interest is manifested in "Legal Matters," 3 questions, and "Accounting (other than Collection,") 4 questions. I have also had a list prepared of the unanswered questions, 11 in number; incomplete answers, 8 in number, and differences of opinion, 13 in number. This speaks volumes for the efficiency of the Question Box as a machine. With 567 questions submitted only 11 remain unanswered, or 2 per cent., or an efficiency of 98 per cent., or if we add the questions having incomplete answers 8, another 2 per cent. may be deducted from the efficiency. We may agree, however, that we can find 32 subjects for answers or reports from the work of the Question Box. I will not read all the questions but will record them for reference. Some of the questions are of much importance and will repay investigation.

In addition to the analysis of "Progressive Age" index and the Question Box of the Ohio Gas Light Association, I desire to submit further subjects for your consideration.

Utilization of tar in water gas machines.
Removal of naphthaline by the scrubbers.
The complete analysis of hydrocarbons in our gas.
Carbonization of coal for plants not large enough to put in complete charging and drawing machinery.
Scrubbing and condensation as affecting candle power and investment.
Simple means for dehydrating tar.
Commercial and engineering investigations on how to sell our ammonia and to obtain better results.
Fuel Economies.
Increasing the capacity of present water gas apparatus.
Purification of gas by ammonia.
Increasing the capacity of present purifying boxes.
Analysis of gas accounts by the use of the Hollerith system
Intensified gas burners for street lighting.
Best methods for the removal of oil tar from water gas.
How to determine the proper law for the flow of gas in pipes and the effects of bends.
Dehydration of gas.
Standardizing of coke sizes and nomenclature.
Coke handling apparatus.
Temperatures employed in water gas manufacture.
How to increase the yield of gas coke.
Use of coke breeze in water gas generators.
Tar macadam.
Handbook of instruction for gas company employees.
Investigation of bunsen burner designs.
Method of determining the relative value of gas business.
Developments in securing industrial fuel gas business.
What special appliances have been developed and put in use to meet the requirements of the industrial people.
Retort scurfing.
Improvements in design for a distribution system.
Experiences with "universal" pipe.
Service governors.
Best retort house construction.
Best machinery for charging and discharging retorts.

I will not tire you with giving additional subjects. This list however can be made much longer. Your own experiences can suggest other subjects. But from the above you can see that the problems before the gas industry are important and call for renewed energy and perseverance. In a general way let me urge consideration of the subject of gas rates. A campaign of education can be started none too soon to enlighten the public upon "reasonable rates."

The subject of railroad rates is now much discussed. It may be our turn next. Do we ourselves know all we should upon the proper presentation of this problem before the public mind?

How can the gas business be made more profitable? This is a question involving many factors. Do we know all the factors influencing consumption and earnings? I think we have much to learn.

Never to my knowledge has there been such a demand as at the present time for workers in our chosen industry. Problems pile up faster than solutions are found. The individual cannot do the work unassisted. By co-operative work alone can we hope to succeed. We have the problems, we have the men, we have the Association. Give me your enthusiastic support, your loyalty, your energies, and I promise you your associates will confer honor and dignity upon you, and you will value most highly the opportunity that is yours by virtue of your membership, your companionship in the Western Gas Association.

(To be Continued.)

[Prepared for the JOURNAL.]

Increased Use of Gas in Modern Motor Shops.

By "TRAVELLER."

The extensive development of the automobile construction and repair industry has noticably increased the use of common house gas in connection with the employment of the brazing, tempering, and enamelling operation. Your correspondent visited some of the leading motor shops of the country recently and found the gas consuming apparatus in use exhibited in the cuts. Not only is there an increased consumption of gas in the automobile shops, but in other industrial shops in which there is need of departments of brazing, tempering, etc. Ten years ago the employment of gas in these directions was so limited that it cut a very small figure in the total consumption. But to-day the quantity of gas thus consumed amounts to quite a little. Taking the brazing first, we find that apparatus of the description exhibited in the first of the diagrams is used as a rule. In Fig. 1 the principle of combining the gas with air is shown. Ordinary illuminating gas is drawn from the pipes of the shop into the combining or mixing nozzle through the pipe *B*. Sometimes vaporized hydrocarbons, such as gasoline or petroleum are used for this purpose instead of the house gas. The object is to mix the gas and the air. The air is admitted to the mixing nozzle through the pipe *a*.

A blast or other power is utilized for forcing the air to the right point for proper mixture and combustion. The air blast and the gas fumes combine at the pipe *C* and pass forward to the nozzle. A check valve controls the flow of the combined properties. The mixture which occurs is quite complete, so that a perfect jet can be burned at the end of the outlet of the nozzle. This blast is directed upon the objects to be brazed, and thorough heating and brazing usually result. Then again, in some of the shops I found that the combination of air and gas mixture was effected by means of the double flame device as represented in Fig. 2. Here we have the same principles applied to the two sides of the arrangement. The air blast and the gas are admitted through leaders *d* and *e* on either side, to the V-shaped unions at *F F*. Here the gas and air mix and are carried by the force of the air blast forward to the nozzle tips. Ignition occurs and the mated flames combine as at *G*. The intensity of the heat of the flames thus combined is very severe and effective; brazing can be depended upon in quick order. Usually the heating of the joint by the brazing process with the gas and air burners is accomplished as illustrated in Fig. 3. The parts to be brazed are held so that the laps join closely and then the stream of fire is directed straight against the same as in the drawing. The parts to be united may be wired if desired to hold them in place until the union results.

The edges of the joint should be heated as thoroughly as the inside parts. The parts may be turned so as to allow the flame to contact with the different surfaces. The project of getting the air blast to work in conjunction with the gas flow is sometimes annoying to the workman. In Fig. 4 is a simple blast constructed with the articles usually found about the shop. The fan wheel in the blower *h* is made of a shaft 1-inch diameter and long enough to carry the fan and the wheel driven by the belt. This shaft revolves in box-bearings set for the purpose. The wheel for the belt is keyed or set screwed on as shown. The fan wheel consists of the hub of metal fitted to the shaft, and projecting from this hub are several fans or blades of sheet metal about 2 inches wide at the top and of right length to permit free turning within the case *H*. The case is made of sheet iron. An end is left open so that the rapidly revolving fan wheel can draw in the air by suction and force the air forward out of pipe *I* to the mixing nozzle at *K*. Then the house gas is taken through pipe *J* to the same mixing point. We should also refer to the application of illuminating gas to the service of the case hardening operations in shops. The process of heating the metal parts for tempering to a cherry red is effected in a very simple way, providing that a light expenditure is preferred.

Fig. 5 is a sketching of one of the home-made contrivances I noticed in practical service for this line of work. A common form of sheet metal can be made as shown.

This is about 20 inches high and 12 inches in diameter. It is marked *M*. There is a slit cut in the base of the can on one side so that the gas jet can be admitted. The gas is taken from the gas jet *L* and is carried to the burner by means of the rubber hose. The gas jet is ignited inside the can, and the necessary amount of air to mix with the gas to make an effective flame is received in through the slit. It is a simple process, and at the same time effective. The jet of flame resulting from the combination passes up through the bore in the top of the can, at which point the heating of the metals for tempering can be done. Then there is also gas consumed in the enamelling departments of shops, harness works, etc. Fig. 6 is a drawing of the common process of utilizing the gas with air for this purpose. There is a combination of 1, 2, 3 or more pipes *P*, each about 3 inches in diameter and long enough to afford effective heating for the apartment in which the pipes are adjusted. These exterior pipes are drilled with small holes at inch intervals. The air and the gas combine within the pipes and form jets for ignition at each bore. Therefore many little jets of flame result and an equal distribution of the generated heat occurs.

The gas is received through the pipe *o* which connects with the main. The gas is admitted to the 3-inch pipes at the open ends as shown. The air makes a passage for itself into the open pipe ends, being assisted by the indrawing movement resulting from the departure of the air and gas through the burners.

The method of applying this device to the enameling oven is shown in Fig. 7. The parts in process of surfacing with enamel are dipped in

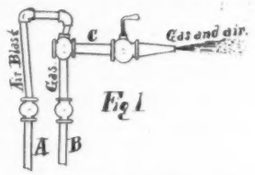

Fig 1

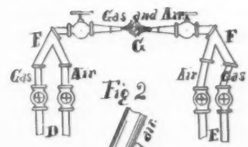

Fig 2

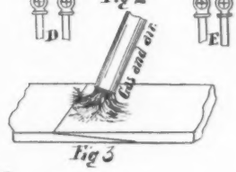

Fig 3

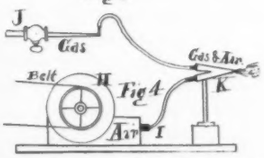

Fig 4

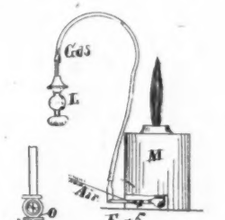

Fig 5

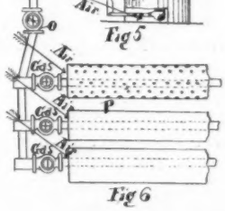

Fig 6

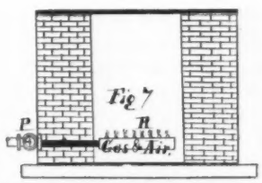

Fig 7

the tanks containing the coating ingredients. Then the parts are drained off and are then hung up in the bake oven on hooks just over the line of flames produced by the bores of the pipes. The ovens are erected of brick or sheet metal. The pipe admitting the gas to the burner is usually placed through the masonry at *p*. The pipes of the burners are represented at *R*. Thus we see that gas is finding a use for itself on practical lines in some of the newest of industries. In some where gas was discarded for electric lights the gas pipes are kept in order to furnish gas for the various mechanical processes.

Economy and Efficiency in Train Lighting.[1]

Look at a railway map, and note the railway lines taking their sinuous courses throughout the country, intersecting and linking up with each other at numerous points, and appearing in the graphic representation almost like a net thrown over the land. Consider then the numerous trains that, after the light of the day has failed, are through the evening and during the night speeding to their almost innumerable destinations. Consider, again, that during these hours all the trains have to be illuminated—for safety, convenience, and comfort; and then ask the unanswerable question, what does all this lighting cost? It is not always a futile exercise to initiate the consideration of a subject at a point that does not admit of a ready reply, and to sheer off from it to others having a bearing upon it. We have no hope of ever arriving at a reliably approximate answer to the question, for the reason that the lighting is still of varied condition—that antiquated smoky oil lamps are still in existence, that electric lighting of relatively inconsistent character and performance has had considerable application, that Pintsch's Patent Lighting Company's system of compressed oil gas lighting is largely in vogue, and, now that this system applied to incandescent mantles has been demonstrated to be an economic and efficient success, it is largely on trial, and is being looked upon with favor.

Arriving at the conclusion that the question cannot be answered

1. *Journal of Gas Lighting.*

with any degree of satisfactory accuracy as to what all this varied lighting of our railway trains cost in the aggregate, it is comparatively easy to arrive at some determination as to which is the most economical system of train lighting of those above mentioned. But in considering the conomic question, we must conjoin with it that of efficiency—for it would be an easy matter by indifferent means to attain to a cheapness in lighting that would to a certainty bring any line into disrepute, and do it and the districts through which it passes incalculable harm. In suburban traffic, for instance, with the ever increasing competition of the convenient and expeditious tramway services, unless the railway companies are prepared to offer counterbalancing comfort and conveniences, there will be a growing and very serious loss of business. Good lighting must therefore be taken as having for them a commercial value; and good lighting combined with economy and reliability is what the railway companies want. Neither can be obtained by the old system of oil lighting, involving as it does so much labor in trimming and cleaning, and yet resulting in the vexing of the souls and eyes of passengers by trains so illuminated. Electric lighting is expensive in its installation and running, the wear and tear is great, reliance upon it is far from being assured, and the illuminating result from the travellers' point of view is too variable to be voted a success. It is a strange thing that it is impossible (or at all events we have found it so) to get accredited figures as to the cost of train electric lighting. But on good authority, we are told that the cost of an electric lighting installation on a single train on the Great Western Railway is approximately £700; and the running expenses are of a character that the less said about them the better.

The Directors of the Great Western Railway Company have also, we understand, stopped their orders for the electric lighting of trains, since they have found something of a more economical character, and giving greater efficiency, in incandescent gas lights. An inspector on the Brighton Railway not long since told an inquirer of the breakdowns and trouble they had experienced with their electric lighting installations, which helped to run up the costs. On another line running out of London, a surburban train, with compartments fitted up with two nominal 8-candle power lamps, had in each compartment only recently one lamp shedding dismal illumination. A distressed passenger cried to the guard for "more light;" and the unsympathetic but dutiful guard replied that "his orders were to switch on only one lamp, so as to save." Save what? These are peeps behind a tightly drawn veil. Then we have the Pintsch Company's system of compressed oil gas lighting, a general description of which appeared in a previous article. The actual costs involved by this system are easily ascertainable and confirmable, seeing that 75,000 carriages and locomotives have been fitted with the system in the British Empire alone. With this system, using the old flat flame burner, an illuminating power of 8 candles per cubic foot of gas per hour is obtained, or, if double burnered lamps are employed, 16 candles. The cost of lighting, including depreciation of plant, interest on capital, and working expenses, varies between 0.2d to 0.3d. per light per hour, according to the cost of fuel and labor. Compared with oil lighting and electricity, this is declared to be cheap. But, even so, it is not all the traveller by train at night time requires to enable him, in any seat he may occupy in a compartment, to read with perfect comfort. But we all know, from recent reported experiences, that, by the combination of this system with the incandescent gas burner, the two extremes of great economy and the highest efficiency have been concentrated. Success of such a marked order has followed the first experiments with this combination that trials which may be truthfully described as extensive are now being made on all the principal lines in England and the Colonies; and the reports that have been received are of an exceedingly gratifying character. Both the vertical and inverted forms of burner have been tried; but the latter being shadowless, they have gained the higher approbation in general working.

Improvements in details connected with this system of lighting railway trains have followed in rapid succession since our last article was published; and this is the justification for now giving some further consideration to the question from the standpoints of economy and efficiency, as we have the utmost faith in the power of this method of public demonstration to advantage the system of lighting to which the gas industry are so infinitely indebted. It is with this system that the Pintsch Company are now competing with electricity in the particular province of lighting which they have made so much their own, and with which they are offering economies to the managers of our railway systems which have not hitherto been approached in the superior lighting demanded by the times. The latest developments are to be found on a Pullman car running on the Brighton line; and by permission of Mr. W. Forbes, the General Manager of the London, Brighton and South Coast Railway, a party of gentlemen were privileged to travel from Brighton in this car, for the purpose of inspecting and judging of the lighting, last Thursday night. The train by which the party journeyed to Brighton was fitted with the electric light; and it was possible to take an optical measure of its efficiency in passing through the several tunnels *en route*. It was not, however, until the party found themselves enjoying and admiring the effulgence in the Pullman car at Brighton that they realized what a stride had been made by the new system. Just as an electrically lighted carriage, with the lighting at its best, was a great advance over the old oil lamp, so the visitors, whatever their prejudices, could not evade the admission that the lighting of the Pullman car was an immense advance over an ordinary electric lighted one, and represented the acme of carriage lighting within their experience, at a remarkably low expenditure. There were only four lamps in the carriage fitted with inverted burners (which the Pintsch Company are using under an agreement with the New Inverted Incandescent Gas Lamp Company). Each was giving a light of 80 candles, measured photomeirically at a distance of 6 feet from the mantle, with a consumption of only 1.3 cubic feet of compressed oil gas per hour. Therefore from the 4 burners a light of 320 candles was being obtained, with a consumption of only 5.2 cubic feet of gas per hour.

To illustrate what an improvement the Pintsch Company have effected by the incandescent mantle upon their former system of flat flame lighting, it has only to be mentioned that these 4 lamps were each previously fitted with 4 flat flame burners, consuming (each cluster) 3.5 cubic feet of gas, and giving a light of only 28 candles. Therefore, for the lighting of the car, by the flat flame method, 14 cubic feet of gas were used, and an illuminating power of 112 candles obtained—showing that the inverted incandescent burners have effected a saving of 8.8 cubic feet of gas per hour, with an increase of 208 candles in the illuminating power. As to what this means in economy in the amount of gas required to be produced, in consumption, labor and time occupied in recharging the cylinders, multiplied by hours of use and number of running cars, railway authorities need no instruction from us. The mantles were as purely incandescent as it is possible for mantles to be. Incidentally it may be stated that the train of ordinary carriages that has been running experimentally on the line since January last is fitted with burners giving 25 candles with a consumption of only 0.6 cubic foot of gas per hour. The improved type of burner with which the Pullman car is fitted is so constructed that the mantle is supported by the reflector; and reflector, mantle, and globe are carried by a hinged frame, so that all parts are accessible for cleaning or attention within the carriage, without removing the mantle, and with the minimum of trouble. The improved burners can also be adjusted to take mantles of illuminating powers ranging from 25 to 80 candles.

Now as to the durability of the mantles, it will be remembered that those which the Pintsch Company are using are fitted with a patented wire framing. The New Inverted Company are the makers; but the Pintsch Company have the right to their exclusive use. Experience has shown that, in general lighting, the inverted burner mantle, if not subjected to violent treatment, has a longer life as a rule than the ordinary mantle; and for railway lighting they are now made of tougher material, supplemented by the wire basket, the duty of which is to support fractured mantles, so that a carriage cannot possibly be thrown into darkness. For this purpose it has been found very effective. The experience on the Brighton line is that the mantles will stand the strain of vibration and shock well for an average of two months; and they are commonly in use for four months without being destroyed. It may with confidence be said that the saving of gas will far exceed the cost of the mantles, without taking into consideration the generous increase in light, the intensity of which, the experience on the Pullman car demonstrated, does not fluctuate. These are the passengers' gains. And where the oil gas system is already installed, these improvements can be achieved at the cost of a few shillings per lamp. By means, too, of by-pass lights, the lighting of a whole train can be controlled from the rear by means of a single lever; and this is an advantage on railway routes with tunnels.

We have failed to answer the question in the opening paragraph as to what is the total cost of lighting our railway trains; but, working from that point, the consideration given to the subject leaves no doubt as to which of the various systems of lighting in vogue offers the highest efficiency in relation to initial expense and running costs. About railway train lighting, it can be written that notable progress has been made.

(Concluded from Page 132.)

External Causes of Sparking in Direct-Current Machinery.

[By Sydney Woodfield, in *Electrical Review*.]

4. Vibration is more frequent with small machines, and, in any case, it is detrimental to the proper operation of any plant. In direct connected sets it is usually due to unbalancing of the engine, knocking of the big ends, badly designed foundations or footings, etc. The cause of the vibration should be immediately localized, as it will cause sparking and a general deterioration of the plant. In belted machines an unbalanced armature or pulley will cause trouble, but more often the cause will be found in a bad joint in the belt, which will cause a considerable amount of sparking every time the joint passes over the pulley. Belts should, therefore, be dressed smooth, and should be run with, not against the lapping; this will effectually stop jarring. The crowns of driving and driven pulley should be alike as otherwise wobbling of the belt will result. A back and forth movement, due to unequal stretching of the edges of the belt, will also tend towards vibration.

5. Usually the makers of the machines mark the correct position of the brushes on the yoke, and unless the machine is operating under abnormal conditions, this location should not be departed from. Under normal conditions in multipolar machines the brushes should be set exactly equidistant around the commutator and parallel to the segments, and the brush boxes should be exactly the same distance from the surface of the commutator. It sometimes happens—but very rarely—that better commutation can be obtained by setting each brush stud individually; this is generally caused by the poles not being spaced accurately magnetically, although they may be mechanically. With angular carbon brushes care must also be taken to see that they are slipped into the boxes the correct way. If the brushes of one stud are reversed sparking will ensue, since they are not equidistant around the commutator.

6. The field frame in all machines of the multi-circuit type must be concentric with the armature, *i. e.*, the axes should coincide so that the air gap will be the same all the way round; this should be carefully tested, turning the armature round into different positions in order to eliminate errors caused by the armature not being truly wound. If the air gap is not the same there may be sparking even on light loads. The armature must also be set so that the center line of the armature horizontally coincides with the center of the poles, although sometimes this will be different. Most makers supply machines of large size with multiphase equalizing rings, these rings automatically equalizing the potential difference between brushes without regard to the centering of the armature; but it must be borne in mind that this equalization is only obtained at the expense of current flowing between the high and low sides, and therefore as stated above, due care should be given to centering; this may be tested by measuring the pressure across each pair of brushes, all others being raised at the time and the speed remaining constant, and equalizer rings being of course disconnected. Obviously, in a two pole machine, or a multipolar one with a series wound armature, this fault cannot exist. Some makers allow a little wider air gap at the bottom on new machines, so that when the bearing brushes get warm the armature becomes central.

7. On large new machines, more especially those having commutator split spiders or sectional clamping rings, it may be necessary to tighten up the commutator. When this has been done it should be frequently smoothed with fine carborundum sandpaper, and during the first month or so the segmental rings should be watched and kept tight until the commutator bar gets a firm bearing. It is advisable to do this tightening after a good long run, when the machine is hot. Sometimes a commutator may require skimming up in the lathe, but more often it is unnecessary to do this, as good results may be obtained by stoning, *i. e.*, by using a block of sandstone about 4 to 6 inches by 8 to 10 inches; this block should be held in a wooden holder of convenient shape, and the long surface of the sandstone made to fit the arc of the commutator. A stone made in this way will usually reduce high bars as it will not follow inequalities in the commutator. After this has been done, a sheet of fine sandpaper should be used, and a buff finish imparted by reversing the sandpaper. This method saves considerable time and money, and insures sparkless commutation; but care must be taken to protect the armature windings and commutator leads from the grit, carbon and copper dust. If the commutator is eccentric, which is usually due to loose bearings or loose bearing pedestals, the commutator must be turned up true in the lathe. A short circuit between two bars of a commutator will easily be recognized by the blackening of the bars, and also by abnormal heating of the coils connected thereto. Sometimes it may be caused by a piece of metal getting between the bars, or by a loose piece of solder inside the commutator. More often it is due to sparking from some cause burning the mica; the spaces then get filled with carbon and copper dust, thus forming a permanent short circuit. The remedy is to clear away all dirt and scrape the space clean, and fill it up with sodium silicate and mica powder mixed to the consistency of paste. An open circuited coil will cause excessive sparking; when running, the commutator will appear to have a continuous ring right round it. The defective coil may easily be localized, as the bars will be burned and blackened. The machine may be temporarily repaired by joining together the two bars. A grounded commutator or armature coil on a machine with one pole earthed, in the case of a motor, will usually blow the fuses; in the case of a generator, the coils short circuited will probably be burnt out. Often considerable damage is done through the mica not wearing evenly with the copper; the mica should preferably be reduced by stoning, and then grooved out to a V-shape. In large machines, never rely on testing with a magneto, since the static capacity is generally sufficiently large to ring the bell; an ordinary Wheatstone bridge or voltmeter should be used.

SPECIAL ENGLISH CORRESPONDENCE.

Communicated by Norton H. Humphrys.

Salisbury, England, July 8th, 1905.

Municipal Trading.—Business Prospects.—The Small Manager.

It has been contended, and with great force, that whatever the duties of public authorities as representatives of the public may be, they do not include the right to engage in trading ventures of any kind, because if the enterprise is successful, it is competing with private enterprise, and if unsuccessful, it has to be bolstered up at the public expense. There is never any difficulty in finding an outlet for public funds, and therefore the addition of a trade deficit account to the numerous other claims on the public purse, is a most objectionable superfluity. It is bad enough when the ratepayer knows that he is paying a deficit, but worse when he does not know it, and there is every temptation on the part of the authorities to conceal the existence of a dark horse, by subsidizing a more fortunate venture, or various other indirect methods. The council or committee who supported the introduction of a particular scheme, know that it is as much as their seats are worth to admit even partial failure; the officers concerned are in a similar position. So the true position of affairs is concealed, with a result that is not only unfortunate as regards the one particular district concerned, but also as to others who are induced by the rosy accounts published, to form an opinion unjustly favorable to the scheme, and to follow suit with a similar one on their own account, thus rushing after their neighbors into a mess which they would have avoided, if accurately informed of the true state of affairs. A great deal might be said on the losses attaching to municipal enterprise, but the question to which the present remarks are directed is that of competition, which practically is directed against themselves in any case either as individuals or collectively. A municipality may sell a gas pendant or cooker, thus securing a deal that otherwise would go to an individual ratepaying shopkeeper, or they may where they possess both electricity and gas supply works—offer free wiring or other inducement to stimulate a sickly electric venture, even if it thus loses a customer for the more robust gas department. Municipal trading would soon be shown in its true colors, if it commenced right away by taking a shop and competing with shopkeepers, who have votes and influence, but unfortunately it usually begins by buying up a private company, which though one of the largest ratepayers, has no vote or representation. But a time will come when, by stress of circumstances, it cannot avoid trespassing upon the preserves of the shopkeeper. Having acquired a possession, the interest on the investment must be earned, and the concern kept in a going position. With regard to gas and electricity supply, a certain amount of hiring, hire-purchase, or even free supply of fitments and fictures becomes imperative if the thing is to be kept alive. And then the trade association, representing a substantial number of votes, comes in to view. The municipality may sell gas with impunity and without risking a vote, but directly they sell a piece of pipe or a burner, they have to face the gasfitters or the ironmongers' association, or some other body that is influential as regards vote and interest. As example of this feeling, we have the case of a ratepayer in a midland town who, while he has accepted muni-

cipal gas for 30 years, announces his intention of boycotting all customers who will not declare against municipal fiasfitting. It is a distinction without a difference, and circumstances may at any time destroy that distinction, and even if the present grievance is adjusted it is impossible to avoid fresh ones. The fact that municipal trading means individual competition cannot be hoodwinked or explained away, and to be consistsnt those who advocate it must be willing, when their turn comes, to surrender up their own interests and sources of income for the good of the community at large, and that without compensation, recognition or even gratitude.

The coal trade appears to be very slack and there is great competition for business. Gas undertakings are, therefore, able to place their contracts for the ensuing 12 months on very favorable terms, though this advantage is somewhat discounted by the fact that the state of affairs is the coal market is faithfully reflected in the coke yard. This position, of course, is most favorable for those who are large users of coke for making water gas. Generally speaking, the advent of generator furnaces has led to a larger production of coke, and, therefore, this point acqaires greater importance, as it is one thing to make more coke and another thing to sell it on satisfactory terms. The object of making more coke is to make more money, but I have known concerns where the first condition is reached but not the second. The result of increasing the output 10 or 20 per cent. is to glut the market and necessitate an all-round reduction. And sometimes a similar result is forced on a country undertaking by the selfish, injudicious action of a large company at some distance, who adopt the dog-in-the-manger policy of selling a large parcel of surplus coke at a cheap rate on the condition that he takes it 50 miles away. So it is no uncommon thing to find that, notwithstanding an additional make of 2 cwt. per ton or so, the actual receipt is less and not more, to the great chagrin of the engineer who has induced his committee to consent to the extra cost of generator furnaces, on the understanding that the same will be more than recouped by increased receipts for coke. As regards tar and sulphate, neither of those markets is in a very robust condition; so that altogether the cheap coal is considerably discounted by cheap residuals. But on the whole, the condition is favorable. There is a large demand for gas, which is the sheet anchor. And there is no difficulty about paying full dividends and at the same time making directly or indirectly some provision against the rainy day that is sure to come sooner or later. The complaint is greatest in the house coal branches, who say that summer trade has become a thing of the past, the coal kitchener having been entirely replaced during the warm weather by the gas or the oil stove. And it is poor comfort to the owners of coal that is not suited to gas works purposes to know that more gas coal is used at the gas works. The position in the coke trade above instanced is in many districts aggravated by the fact that the gas works not only displaces coal but also coke. This is especially the case amongst the poorer classes of the community, who are eagerly accepting the advantage offered by slot and prepayment meters combined with a free fitting scheme. The old system has always had its Jeremiahs. There are those who have uttered solemn warnings as to the folly of spending money on this department. But everybody does it. Those who have adopted the system are extending it, and those who have not adopted it are getting ready to do so as soon as they can. The slot meter is not all beer and skittles. It is just as easy to lose money in that direction as in any other. But where applied with reasonable caution and skill, it is a success and has proved a valuable addition to the business. It is entirely a question of exercising reasonable foresight as to the probability of business, and every application for fittings of any kind on the free system should be received in that light and exclusively in regard to its own merits by a competent inspector. Following this course it is possible, at an outlay of something less than £5 per customer, to receive an average income of £3 per annum..

Some attention has lately been directed to the fact that the management of small gas works has been somewhat neglected both by our Central and District Associations, and there is a tendency to monopolize the whole time and space available by matters relating to large works only, such as installations of stoking machinery or inclined retorts, all very interesting and informative in their way, but it appears to be forgotten that for one man who is called upon to put down installations of plant, the cost of which runs well on into 5 figures, there are 20 who have much smaller fish to fry and from their situation and surroundings stand more in need of technicnl information than their more important colleagues. The engineer of a large works has a competent head of every department, the latest thing in machine tools, an ample stock of parts, and probably several good manufacturing firms within easy reach. But the small works man, situated frequently in some out-of-the-way if not distant locality, has to depend not only on his own brains but also on his own hands in case of emergency, with no help beyond the unskilled laborer, and with no tools other than those in his basket. In large towns there are several engineering confreres with whom difficulties can be discussed, but in small places the gas manager is often absolutely alone. His administrative faculties need not be so great, but he requires a wider, all-round knowledge of detail, and as a rule has not enjoyed the educational training, technical classes, etc., that are available in all our principal towns. I am, therefore, pleased to see that the Scottish Junior Gas Association have been able to induce Mr. O'Neill, of Dunbar, to give them a paper on the management of small works, dealing with some of the vicissitudes of a country gas manager's daily life. The subject is rather too wide for one paper, and, therefore, the communication reads rather scrappy, but the various topics dealt with are treated in such a competent manner as to make one, like Oliver Twist, hold out his plate for more. The small man does not need to be a full blown engineer or to have swallowed a three volume treatise on chemistry. But it is an advantage if he can make a decent scale drawing, conduct a few simple quantitative chemical tests, and get out an accurate set of accounts showing the results of his annual working. Either of these matters might make a good text for a paper at the association meeting, as there are little points in connection with them that are not to be found in any treatise. In large undertakings the accounts are a separate department but in the small works the manager has to do the whole, and is therefore urgently in need of labor saving devices, in the way of avoiding unnecessary duplication or repetition, without at the same time sacrificing accuracy. It is possible to get something less cumbrous than the time honored journal, ledger and cash book, but that affords as much or more information. The numerous improvements in appliances have thrown a great deal more responsibility on the small man, who is expected to be able to explain and if necessary fix up any fitting that is brought in from the nearest large town. The incandescent burner is a case in point. The manager of a large works looks up a suitable gasfitter or lamplighter, and appoints him maintenance foreman to take full responsibility of that important and increasing department. But the small manager has to do the maintenance himself.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

Mr. L. W. Le Baron, formerly Superintendent of the Albuquerque Gas, Electric Light and Power Company, of Albuquerque, N. M., has resigned, to fill a similar position at Grand Junction, Col.

The Western United Gas and Electric Company has added one more gas plant to its already large string by purchasing the Lockport (Ills.) gas works. The Lockport Company was owned and controlled by local capital, headed by Frank Sloan. The plant will be run for a time as a separate institution, but will eventually be closed down and gas piped to that place from Joliet, Ills.

The Temple Gas Company, of Temple, Tex., has been organized to supply light, heat and electricity. The incorporators are H. C. Bancroft, F. D. Lyon and S. Bonzio.

The old North End gas plant at Boston, Mass., will be dismantled and part of the ground sold. The proceeds are to be applied to the erection of the new holder. That portion which will be retained is mainly the site for the great holder which is building and other improvements now under way, contracts for which involving over $500,000 have been issued within the month. The north end plant comprises many thousand feet of land and valuable wharf privileges. The decision of the company to sell real estate no longer productive means that there will be no new issue of stock to pay for improvements this fall. The right of the Company to sell property and apply the proceeds to capital account is embodied in the Company's special charter, which says: "If in the conduct of its business said Boston Consolidated Gas Company shall deem it advisable to sell and convey any real estate conveyed to it for the purposes of this act, or if any part of such real estate shall hereafter be taken in the exercise of the right of eminent domain, the proceeds of such sale or sales or condemnation or taking shall be applied, with the approval of the Board of Gas and Electric Light Commissioners, to the payment and cancellation of obligations of the Company, or with like approval, to any of the purposes for which said board might approve the issue of new capital stock, and, if not thereby exhausted, to the reduction of the capital stock of the Company upon such terms as the board may ap-

prove." The dismantling of the plant will recall to many the days when the gas house was the center of industry in the north end and its workers a power in politics. The present valuation of the plant, according to the assessor's figures, is $1,442,700, of which sum $421,400 is on 333,319 feet of land. The property is on Commercial street, between Charter, Hull, Prince and Snowhill streets, and also on the water side of Commercial street.

A NEW lighting company has been incorporated at Albany to be known as the Empire State Gas and Electric Company. The capital is placed at $50,000 and the incorporators are W. H. Cooper and N. R. Fox, of New Rochelle; C. J. Van Syke, of New York. It is intended to furnish gas and electricity in the cities of Yonkers and Mount Vernon, the towns of Eastchester and Scarsdale, and the towns of Tuckahoe and Bronxville.

A LOS ANGELES corporation has recently been granted a franchise for the erection of a gas plant to serve residents at Sunset Beach. The work is now under way.

CITIZENS of Greater Boston are now burning 95-cent gas instead of $1 gas. The Consolidated Gas Company will in this way go half way toward 90-cent gas required by the legislation enacted by the last Legislature. The further reduction of another 5 cents will come about the first of next year.

IN spite of the injunction restraining further interference with the Public Service Corporation work of laying gas mains in the village of Ridgefield Park, N. J., 3 more arrests of Public Service Corporation men were made. The injunction was served and then the men tried to dig up the street. Among the workmen was Patrick Wren, who has been arrested 7 times already in connection with the attempt.

THE Chelsea (Mass.) Gas Light Company having been purchased jointly by the Edison Electric and Massachusetts Gas Company, its electrical business has been turned over to the former. The Newton and Watertown Gas Company, similarly acquired, has been divided in like manner. Its electrical plant will be abandoned, and electricity will be supplied by the Edison Company's plant.

THE State Board of Health has reached the conclusion that odor from the New England Gas and Coke Company's works at Everett is a nuisance and must be abated somehow. The Board will employ experts to inspect every process and will try reasonable expedients to prevent industrial processes from being a nuisance.

THE Hartford City (Conn.) Gas Light Company, has given a mortgage to the Connecticut Trust and Safe Deposit Company on all its property in Hartford and other places as security for the bond issue of $1,000,000 which the latter Company certifies. The issue is of 1,000 bonds of $1,000 each. In connection with the above transaction a deed of trust has been filed with the town clerk. Another paper filed in the same office is the release by the Travellers Insurance Company of four mortgages on property of the Hartford City (Conn.) Gas Light Company, amounting to $500,000.

THE Connecticut Legislature has authorized the Derby (Conn.) Gas Company to increase their stock to $1,000,000.

THE annual meeting of the Easthampton (Mass.) Gas Light Company was held on the 20th inst., and the following officers were elected: President, Horace L Clark; Treasurer and Manager, George L. Manchester; Clerk, Philip Mayher; Auditor, Horace L. Clark; Directors, Horace L. Clark; George L. Manchester and Charles H. Johnson. A dividend of 3 per cent. was declared. It was decided to reduce the price of gas to $2 per 1,000 cubic feet, with discounts on bills paid before the 15th of the month of 20 cents per 1,000 cubic feet when the amount consumed is less than 500 feet; 30 cents when between 500 and 5,000 feet, and 40 cents when over 5,000 feet.

AT the annual meeting of the stockholders of the Northampton (Mass.) Gas Light Company the Directors elected were: Charles N. Clark, Dr. L. Clark Seelye, Edwin H. Bannister, H. C. Crafts, of Northampton, and John F. Staar, of Camden, N. J. Mr. Clark was re-elected President of the Company; Dr. Seelye, Vice-President; Mr. Bannister, Clerk and Treasurer; Mr. Crafts, Superintendent; Mr. R. M. Starkweather, Assistant Treasurer, and Mr. James T. Abbott, Auditor. The report of Superintendent Crafts showed that during the past year 103 meters and 105 gas ranges had been installed, and that about 41,000,000 cubic feet of gas had been made. A semi-annual dividend of 4 per cent. was declared.

THE Norwich City (Conn.) municipal gas plant has contracted for new purifiers and coal gas condensing, scrubbing, washing, exhausting and tar extracting apparatus, purifiers and a water gas set and is rearranging the offices in the City Hall.

BALTIMORE, MD., will enjoy dollar gas on September 1st.

COMMON Council passed on third reading the franchise on the projected Hightstown (N. J.) Gas Company, at its meeting on July 11. in spite of the request of Mayor Norton that the matter be laid over for a month to enable him to place in legal form a proposition to the borough for the construction of a gas and electric plant. The Mayor had the fuel gas bee in his bonnet.

GAS for illuminating and fuel purposes is at last in sight for the Soo, Mich.; at least, F. H. Clergue is understood to be considering plans for the erection of the proposed works in the immediate future.

FREDERICK E. GUNNISON, of Brooklyn, who has been named as Chairman of the New York Gas Commission by Governor Higgins, is well-known in Massachusetts. His birthplace is in Massachusetts, and he spent the early years of his life in Worcester, making his start in law in that city. This appointment fills the commission, and the appointee will draw $8,000 per annum.

THE Reading and Suburban Gas Light Company has been chartered. It is organized to manufacture and supply gas for lighting purposes in the borough of Mount Penn and in the townships of Spring, Cumru, Lower Alsace, Upper Alsace, Muhlenberg and Bern, in Berks county, Pa. The application was made by John R. Keppleman, John H. Reiley and Theodore M. Keppleman.

THE Rockville (Conn.) Gas and Electric Company, of which Mr. A. M. Young, of New York is President, announces an improved gas and electric service. It is possible that some deal will be made with the Hartford Electric Light Company to furnish a service in Rockville. If this is not arranged some $40,000 will be expended in improving the Rockville plant. The gas plant is to be improved at a cost of $25,000, and the new machinery has been contracted for.

THE St. Lawrence Company, of Hartford, Conn., has been incorporated, and it is to engage in the business of buying and selling electric light and gas plants in St. Lawrence county, N. Y. The amount of capitalization is $100,000, and the incorporators are Arthur L. Shipman, Charles W. Gross and Arthur B. Peck, all of Hartford.

THE Troy Gas Company of Troy, N. Y., also operating the electric plant has been ordered by city ordinance to lay several miles of their electric wires underground.

THE Lewisburg (Pa.) gas and electric light plant was recently purchased by Philadelphia capitalists. It is the purpose of the new company to at once entirely overhaul the present quarters. Water gas will take the place of the coal gas now being used and the price for both fuel and illuminating gas will likely be $1 per 1,000 cubic feet.

TONAWANDA, N. Y., has dispensed with gas for street lighting for the first time in its history. The price to be paid for the arc lamps is $70 each per year, and $20 for the smaller lamps.

THE city chemist of Buffalo reported a deficiency in the quality of the gas furnished by the Buffalo Gas Company during the past six months. For this reason the sum of $514 has been deducted from the gas company's bill, which amounted to $4,764.

THE Berlin (Wis.) Gas Company is making extensive extensions of its street main system, the business is growing at an enormous pace and by next summer the Company will have an output that will go beyond their expectations.

THE AMERICAN GAS LIGHT JOURNAL

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NOTIFICATION RESPECTING ADVERTISING.

Orders for new advertising, or for changes in standing advertisements, to insure attention in the issue following their reception, must be in hand any time of Wednesday.

AGENTS:

New York—American News Co., 39 and 41 Chambers St.
Germany—Lemcke & Buechner, of New York.
England—Aug. Siegle, 30 Lime Street, London.

MONDAY, JULY 31, 1905.

The Market for Gas Securities.

Midsummer dullness prevails in the gas stock market, traders showing little disposition to buy or sell; consequently quotations show slight changes from last week's prices.

At the close Consolidated made a loss of 1 point.

Baltimore Consolidated is stronger, and Peoples, of Chicago, is on the up turn.

The demand for gas bonds is greater than the supply, and several issues are selling on a basis that yields less than 4½ on the investment.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

JULY 31.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share.

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated	$73,177,000	100	188½	190
Central Union, Bonds, 5's	3,000,000	1,000	108½	110
Equitable Bonds, 6's	1,000,000	1,000	..	10[illegible]
" 1st Con. 5's	2,300,000	1,000	118	120
Mutual	3,500,000	100	300	320
Municipal Bonds	750,000	..	..	..
New Amsterdam Gas Co..				
Bonds, 5's	11,000,000	1,000	111	113
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	35	..
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	..	..	..
Northern Union, Bonds, 5's.	1,250,000	1,000	104	106
New York and East River..				
Bonds 1st 5's	3,500,000	1,000	112	114
" 1st Con. 5's	1,500,000	..	106½	108½
Standard	5,000,000	100	125	130
Preferred	5,000,000	100	145	155
Bonds, 1st Mortgage, 5's	1,500,000	1,000	116	117
Yonkers	299,650	500	150	..
Out-of-Town Companies.				
Brooklyn Union	15,000,000	100	186	194
" " Bonds (5's)	15 000,000	1,000	113	115
Bay State	50,000,000	50	⅛	3/16
" ncome Bonds	2,000,000	1,000	..	75
Binghamton Gas Works	450,000	100	..	65
" 1st Mtg. 5's	502,000	1,000	93	96
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	6	7
" " Bonds, 5's	5,250,000	1,000	66	68½
Capital, Sacramento	500,000	50	..	35
Bonds (6's)	150,000	1,000	..	..
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	104¼
Cincinnati Gas and Electric Co	29,500,000	100	106⅝	106⅞
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	97½	99
Columbus (O.) Gas Lt. & Heating Co	1,682,750	100	..	95
Preferred	3,026,500	100	107½	103
Consumers, Toronto	,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	83½	84
Mortgage, 6's	3,500,000	..	..	118
Chesapeake, 1st 6's	1,000,000	..	..	..
Equitable, 1st 6's	910,000	..	..	..
Consolidated, 1st 5's	1,490 000	..	..	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
" Con. Mtg. 5's	880,000	1,000	89½	92
Bonds	75,000	..	..	100
Detroit City Gas Co	4,235,500	50	..	50
" Prior Lien 5's	5,603,000	1,000	..	98
Detroit Gas Co., 5's	381,000	1,000	75	80
" Inc. 5's	16,000	100	98½	100
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	..	101
Essex and Hudson Gas Co.	6,500,000	..	39	40
For Wayne	2,000,000	..	..	..
" Bonds	2,000,000	..	55	..
Grand Rapids Gas Lt. Co. 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	..	104½	105½
" Bonds, 5's	10,500,000	..	107	108
Indianapolis	2,000,000	..	70	75
" Bonds, 5's	2,650,000	..	104½	105
Jackson Gas Co	350,000	50	82	..
" 1st Mtg. 5's	200,000	1,000	101	102½
Kansas City Gas Light Co., of Missouri	5,000,000	100	..	36
Bonds, 1st 5's	3,823,000	1,000	102	104
Laclede, St. Louis	10,000,000	100	..	..
Preferred	2,500,000	100	95	110
Bonds	10,000,000	1,000	108½	109
Lafayette Gas Co., Ind	1,000,000	100	..	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas & Elec. Co.				
" 1st Mtg. 6's	350,000	1,000	107½	108¼
" 6 per cent. scrip, due 1910	100,000	25	85	87
Montreal, Canada	2,000,000	100	218	218¾
Nashville Gas Lt. Co	1,000,000	100	110	..
Newark, N. J., Con. Gas Co.	6,000,000	..	56	58
Bonds, 6's	4,600,000	..	105	105¾
New Haven	2,000,000	25	200	..
Peoples G. L. & Coke Co., of Chicago	25,000,000	100	105	105½
Peoples Gas Lt. & Coke Co., Chicago, 1st Mortgage	20,100,000	1,000	..	..
2d "	2,500,000	1,000	104	..
Rochester Gas & Elec. Co..	2,150,000	50	88	..
Preferred	2,150,000	50	118	..
Consolidated 5's	2,000,000	..	87½	90
San Francisco, Cal.	15,800,000	100	58½	58¾
St. Joseph Gas Co.				
" 1st Mtg. 5's	751,000	1,000	94	96
St. Paul Gas Light Co	1,500,000	100	45	47
1st Mortgage 6's	650,000	1,000	113	116
Extension, 6's	600,000	1,000	113½	115
General Mortgage, 5's	2,465,000	1,000	92	93
Syracuse, N. Y.	1,975,000	100	50	55
Bonds	2,047 000	1,000	102	..
Washington, D. C	2,600,000	20	305½	306¼
First mortgage 6's	600,000	..	..	..
Western, Milwaukee	4,000,000	..	..	..
Wilmington, Del	600,000	50	230	..

Advertisers' Index.

GAS ENGINEERS.

	Page
A. E. Boardman, New York City	183
Baxter & Young, Detroit, Mich	191
B. E. Chollar, St. Louis, Mo	176
David Leavitt Hough, New York City	191
Davis & Farnum Mfg. Co., Waltham, Mass	192
Economical Gas Apparatus Construct'n Co., Toronto, Ont.	181
Frank D. Moses, Trenton, N. J	183
Fred. Bredel Co., Milwaukee, Wis	190
Frederic Egner, Washington, D. C	196
Geo. R. Rowland, New York City	184
Humphreys & Glasgow, New York City	193
Isbell-Porter Co., Newark, N J	194
J. F. W. Jost, Philadelphia, Pa	188
Kerr Murray Mfg. Co., Fort Wayne, Ind	192
The Gas Machinery Co., Cleveland, O	180
The Jeffrey Manufacturing Co., Columbus, O	190
The Western Gas Construction Co., Fort Wayne, Ind	160
United Gas Improvement Co., Philadelphia, Pa	187

GAS WORKS APPARATUS AND CONSTRUCTION.

A. E. Boardman, New York City	183
Bartlett, Hayward & Co., Baltimore, Md	193
Baxter & Young, Detroit, Mich	191
California Light and Fuel Co., San Francisco, Cal	195
Connelly Iron Sponge and Governor Co., New York City	189
Continental Iron Works, Brooklyn, N. Y	194
Cruse-Kemper Co., Philadelphia, Pa	189
Davis and Farnum Mfg. Co., Waltham, Mass	192
Deily & Fowler, Philadelphia, Pa	196
Economical Gas Apparatus Construct'n Co., Toronto, Ont.	181
Empire Gas Construction & Improvement Co., N. Y. City	191
Frank D. Moses, Trenton, N. J	183
Fred. Bredel Co., Milwaukee, Wis	190
G. Shepard Page's Sons, New York City	191
Humphreys & Glasgow, New York City	193
Isbell-Porter Company, New York City	194
Kerr Murray Mfg. Co., Fort Wayne, Ind	192
Lloyd Construction Co., Detroit, Mich	182
Logan Iron Works, Brooklyn, N. Y	196
Quintard Iron Works, New York City	193
R. D. Wood & Co., Philadelphia, Pa	194
Riter-Conley Mfg. Co., Pittsburgh, Pa	195
Stacey Mfg. Co., Cincinnati, O	195
The Gas Machinery Co., Cleveland, O	180
The Jeffrey Manufacturing Co., Columbus, O	190
The Western Gas Construction Co., Fort Wayne, Ind	160
United Gas Improvement Co., Philadelphia, Pa	187

PROCESSES.

Bartlett, Hayward & Co., Baltimore, Md	183
B. E. Chollar, St. Louis, Mo	176
Economical Gas Apparatus Construct'n Co, Toronto, Ont.	181
Fred. Bredel Co., Milwaukee, Wis	190
Humphreys & Glasgow, New York City	193
The Gas Machinery Co., Cleveland, O	180
The Western Gas Construction Co., Fort Wayne, Ind	160
United Gas Improvement Co., Philadelphia, Pa	187

SCRUBBERS AND CONDENSERS.

Continental Iron Works, Brooklyn, N.Y	194
Davis & Farnum Mfg. Co., Waltham, Mass	192
Economical Gas Apparatus Construct'n Co., Toronto, Ont.	181
Fred. Bredel Co., Milwaukee, Wis	190
Isbell-Porter Co., Newark, N. J	194
Kerr Murray Mfg. Co , Fort Wayne, Ind	192
Logan Iron Works, Brooklyn, N. Y	196
R. D. Wood & Co., Philadelphia, Pa	194
Riter-Conley Mfg. Co., Pittsburgh, Pa	195
Stacey Mfg. Co., Cincinnati, O	195
The Gas Machinery Co., Cleveland, O	180
The Western Gas Construction Co., Fort Wayne, Ind	160

PRODUCER POWER PLANTS.

Economical Gas Apparatus Construct'n Co., Toronto, Ont.	181
R. D. Wood & Co., Philadelphia, Pa	194

TAR AND CARBONIC ACID EXTRACTOR.

Economical Gas Apparatus Construct'n Co., Toronto, Ont.	181
Fred. Bredel Co., Milwaukee, Wis	190
Isbell-Porter Co.. Newark, N. J	191
Kerr Murray Mfg. Co., Fort Wayne, Ind	192
Stacey Mfg. Co., Cincinnati, O	195
The Gas Machinery Co., Cleveland, O	180
The Western Gas Construction Co., Fort Wayne, Ind	160

AMMONIA CONCENTRATORS.
Fred. Bredel Co., Milwaukee, Wis. 190
Kerr Murray Mfg. Co., Fort Wayne, Ind. 192
Michigan Ammonia Works, Detroit, Mich. 175
The Gas Machinery Co., Cleveland, O. 180
The Western Gas Construction Co., Fort Wayne, Ind. 160

GAS METERS.
American Meter Co., New York and Philadelphia. 199
Detroit Meter Company, Detroit, Mich. 193
D. McDonald & Co., Albany, N.Y. 197
Helme & McIlhenny, Philadelphia, Pa. 199
John J. Griffin & Co., Philadelphia, Pa. 2 0
Keystone Meter Co., Royersford, Pa. 193
Maryland Meter and Mfg. Co., Baltimore, Md. 198
Metric Metal Co., Erie, Pa. 190
Nathaniel Tufts Meter Co., Boston, Mass. 193
New York Improved Meter Co., New York City. 198
Pittsburgh Meter Co., Pittsburgh, Pa. 197

PREPAYMENT METERS.
American Meter Co., New York and Philadelphia. 199
D. McDonald & Co., Albany, N. Y. 197
Helme & McIlhenny, Philadelphia, Pa. 199
John J. Griffin & Co., Philadelphia, Pa. 2 0
Keystone Meter Co., Royersford, Pa. 198
Nathaniel Tufts Meter Co., Boston, Mass. 198
New York Improved Meter Co., New York City. 198
Pittsburgh Meter Co., Pittsburgh, Pa. 197

PREPAYMENT METER ATTACHMENTS.
New York Improved Meter Co., New York City. 198
Reeves Mfg. Co., New Haven, Conn. 192

GAS AND WATER PIPES.
Charles Millar & Son Co., Utica, N. Y. 184
Davis & Farnum Mfg. Co., Waltham, Mass. 192
Donaldson Iron Co., Emaus, Pa. 184
Economical Gas Apparatus Construct'n Co., Toronto, Ont. 181
R. D. Wood & Co., Philadelphia, Pa. 194
Warren Foundry and Machine Co., New York City. 184

GAS COALS.
Berwind-White Coal Mining Co., New York and Phila. 190
Perkins & Co., New York City. 190
Westmoreland Gas Coal Co., Philadelphia, Pa. 191

SPECIALTIES FOR OIL AND PIPE LINES.
S. R. Dresser, Bradford, Pa. 198

GAS MAIN STOPPERS.
Safety Gas Main Stopper Co., N.Y. City. 184

MAIN AND SERVICE LAYING.
Sullivan Bros., Flushing, N. Y. 151

GAS TAPPING MACHINES.
George Light, Dayton, O. 184
H. Mueller Manufacturing Company, Decatur, Ills. 182 184

CANNEL COALS.
Perkins & Co., New York City. 190

STOKING MACHINERY.
G. A. Bronder, New York City. 189

CONVEYORS.
Adam Weber Sons, New York City. 188
C. W. Hunt Company, New York City. 181
Dodge Coal Storage Co., New York City. 180
Economical Gas Apparatus Co. Construct'n Co., Toronto, Ont. 181
Fred. Bredel Co., Milwaukee, Wis. 190
G. A. Bronder, New York City. 189
Kerr Murray Mfg. Co., Fort Wayne, Ind. 192
The Gas Machinery Co., Cleveland, O. 180
The Jeffrey Manufacturing Co., Columbus, O. 190
The Link-Belt Engineering Co., Philadelphia, Pa. 181
The Link-Belt Machinery Co., Chicago, Ills. 176
The Western Gas Construction Co., Fort Wayne, Ind. 160

CHARGING BARROWS & COAL WAGONS.
Davis & Farnum Mfg. Co., Waltham, Mass. 192
Kerr Murray Mfg. Co., Fort Wayne, Ind. 192
Stacey Mfg. Co., Cincinnati, O. 195

GAS ENRICHERS.
Standard Oil Co., New York City. 151
Sun Company, Pittsburgh, Pa. 191
The Sun Oil Co., Pittsburgh, Pa. 191

COKE CRUSHERS.
C. M. Keller, Columbus, Ind. 191
Fred. Bredel Co., Milwaukee, Wis. 190
The Jeffrey Manufacturing Co., Columbus, O. 190

STEAM BLOWER FOR BURNING BREEZE.
De Laval Steam Turbine Co., Trenton, N. J. 181

ECONOMIZERS.
Green Fuel Economizer Co., Matteawan, N.Y. 176

GAS GAUGES.
Bristol Co., Waterbury, Conn. 190

GAS GOVERNORS.
Connelly Iron Sponge and Governor Co., New York City 189
Fred. Bredel Co., Milwaukee, Wis. 190
Isbell-Porter Co., Newark, N. J. 194
Johnson-Reynolds Co., Anderson, Ind. 189
R. D. Wood & Co., Philadelphia, Pa. 194

CEMENTS.
C. L. Gerould, Bloomington, Ind. 188

RETORTS AND FIREBRICKS.
Adam Weber Sons, New York City. 188
Baltimore Retort and Firebrick Co., Baltimore, Md. 188
Brooklyn Firebrick Works, Brooklyn, N. Y. 184
Harbison-Walker Refractories Co., Pittsburgh, Pa. 178
Henry Maurer & Son, New York City. 188
James Gardner, Jr., Co., Pittsburgh, Pa. 188
J. H. Gautier & Co., Jersey City, N. J. 188
Laclede Firebrick Mfg. Co., St. Louis, Mo. 180
Missouri Firebrick Co., St. Louis, Mo. 188
National Pyrogranit Co., New York City. 188
Parker-Russell Mining and Mfg. Co., St. Louis, Mo. 177

INCLINED RETORTS.
Adam Weber Sons (Graham, Morton [England] System) 188
Fred. Bredel Co., Milwaukee, Wis. 190
Parker-Russell Mining and Mfg. Co., St. Louis, Mo. 177

VERTICAL S'S.
Adam Weber Sons (Oscar B. Weber's Construction). 188
Connelly Iron Sponge & Gov. Co. (Drake's [Eng.] System) 189
Fred. Bredel Co., Milwaukee, Wis. 19
Parker-Russell Mining and Mfg. Co., St. Louis, Mo. 177

VERTICAL RETORTS, CHARGING AND DISCHARGING VERTICALLY.
Adam Weber Sons, New York City. 183

REGENERATIVE FURNACES.
Adam Weber Sons, New York City. 188
Bartlett, Hayward & Co., Baltimore, Md. 193
Fred. Bredel Co., Milwaukee, Wis. 190
J. H. Gautier & Co., Jersey City, N. J. 188
Laclede Firebrick Mfg. Co., St. Louis, Mo. 180
Parker-Russell Mining and Mfg. Co., St. Louis, Mo. 177

SELF-SEALING MOUTHPIECE DOORS.
Continental Iron Works, Brooklyn, N.Y. 194
Davis & Farnum Mfg. Co., Waltham, Mass. 192
Fred. Bredel Co., Milwaukee, Wis. 190
Isbell-Porter Co., Newark, N. J. 194
Kerr Murray Mfg. Co., Fort Wayne, Ind. 192
Logan Iron Works, Brooklyn, N.Y. 196
R. D. Wood & Co., Philadelphia, Pa. 194
Stacey Mfg. Co., Cincinnati, O. 195
The Gas Machinery Co., Cleveland, O. 180
The Western Gas Construction Co., Fort Wayne, Ind. 160

CHIMNEY CONSTRUCTION.
Adam Weber Sons, New York City. 188

INCANDESCENT GAS LAMPS.
Central Lighting Co., New York City. 179
D. M. Steward Mfg. Co., Chattanooga, Tenn. 177
General Gas Light Co., Kalamazoo, Mich. 179
Geo. G. Ramsdell, New York City. 137
Welsbach Company, Gloucester, N. J. 186

BURNERS.
Central Lighting Co., New York City. 179
D. M. Steward Mfg. Co., Chattanooga, Tenn. 177
Wm. M. Crane Co., New York City. 181

LAVA GAS TIPS.
D. M. Steward Mfg. Co., Chattanooga, Tenn. 177

STREET LAMPS.
Thos. T. W. Miner, New York City. 184
Welsbach Street Lighting Co., New York and Phila. 186

(*Continued on page 176.*)

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(Concluded from page 175.)

PURIFIERS.

Connelly Iron Sponge and Governor Co., New York City. 189
Davis & Farnum Mfg. Co., Waltham, Mass..... 192
Fred. Bredel Co., Milwaukee, Wis..... 190
Isbell-Porter Co., Newark, N. J..... 194
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 192
R. D. Wood & Co., Philadelphia, Pa..... 194
Stacey Mfg. Co., Cincinnati, O..... 195
The Western Gas Construction Co., Fort Wayne, Ind... 160

PURIFYING MATERIALS.

Connelly Iron Sponge and Governor Co., New York City 189

VALVES.

Continental Iron Works, Brooklyn, N. Y..... 194
Davis & Farnum Mfg. Co., Waltham, Mass..... 192
Economical Gas Apparatus Construct'n Co., Toronto, Ont 181
Isbell-Porter Co., Newark, N. J..... 194
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 192
Ludlow Valve Manufacturing Co., Troy, N. Y..... 182
R. D. Wood & Co., Philadelphia, Pa..... 194
Stacey Mfg. Co., Cincinnati, O..... 195
The P. H. & F. M. Roots Co., Connersville, Ind..... 183
The Western Gas Construction Co., Fort Wayne, Ind.... 160

PUMPS.

De Laval Steam Turbine Co., Trenton, N. J..... 181

EXHAUSTERS.

Connelly Iron Sponge and Governor Co., New York City 189
Davis & Farnum Mfg. Co., Waltham, Mass..... 192
Isbell-Porter Company, Newark, N. J..... 19
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 192
The P. H. & F. M. Roots Co., Connersville, Ind..... 183

PURIFIER SCREENS.

John Cabot, Hoboken, N. J..... 180

GAS STOVES.

American Meter Co., New York and Philadelphia..... 199
Detroit Stove Works, Detroit and Chicago..... 176
Keystone Meter Co., Royersford, Pa..... 198
Maryland Meter & Manufacturing Co., Baltimore, Md.. 198
Nathaniel Tufts Meter Co., Boston, Mass..... 198

HOT WATER HEATERS.

Humphrey Co., Kalamazoo, Mich..... 184

GASHOLDER TANKS.

J. P. Whittier, Brooklyn, N. Y..... 184

GASHOLDERS.

Bartlett, Hayward & Co., Baltimore, Md..... 193
Continental Iron Works, Brooklyn, N. Y..... 194
Cruse-Kemper Co., Philadelphia, Pa..... 189
Davis & Farnum Mfg Co., Waltham, Mass..... 192
Deily & Fowler, Philadelphia, Pa..... 196
Economical Gas Apparatus Construct'n Co., Toronto, Ont. 181
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 192
Logan Iron Works, Brooklyn, N. Y..... 196
R. D. Wood & Co., Philadelphia, Pa..... 194
Riter-Conley Mfg. Co., Pittsburgh, Pa..... 195
Stacey Mfg. Co., Cincinnati, O..... 195

STORAGE TANKS.

Davis & Farnum Mfg. Co., Waltham, Mass..... 192
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 192
Stacey Mfg. Co., Cincinnati, O..... 195

PAINTS.

American Standard Composition Co., New York City.. 179

PATENTS, TRADE-MARKS, COPYRIGHTS.

Royal E. Burnham, Washington, D. C..... 180

STEAM TURBINES.

De Laval Steam Turbine Co., Trenton, N. J..... 181

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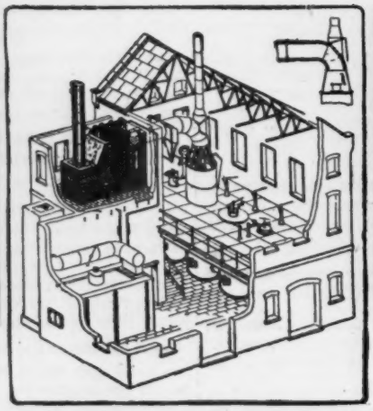

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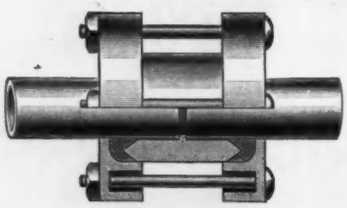
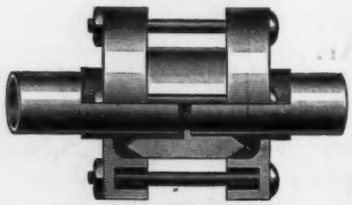


Regular Coupling, Style 1, for Plain End Wrought Iron Pipe.



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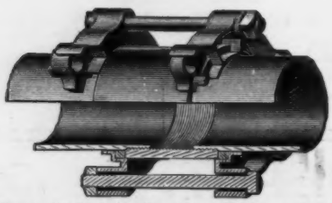
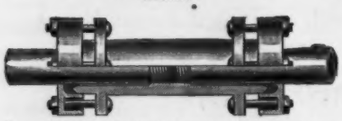


Clamp, Style 4, for Repairing Leaks on Screw Collar.



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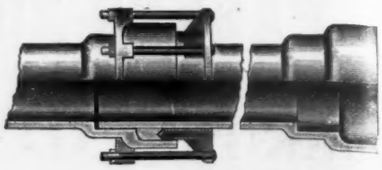
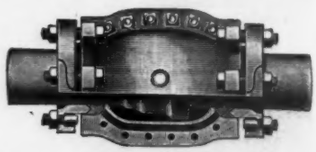
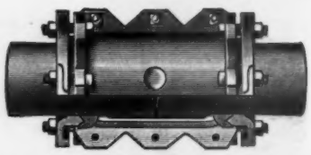


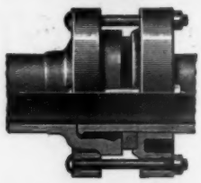
Coupling, Style 9, for Special Style Cast Iron Pipe.



Split Sleeve for Repairing Broken Bell on Cast Iron Pipe.



Split Sleeve for Repairing Broken or Cracked Cast Iron Pipe.



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BENEZET.	CLEARFIELD,	MUNRO	"W. F. B."
WOODLAND,	WIGTON STEEL,	EUREKA,	CORNING.
H. & W. SPECIAL,	WALLACE,	TYRONE,	CLINTON.

For use in every line of work in which refractory Material is required.

Catalogues will be furnished upon application. - - - Correspondence and trial orders solicited.

(In writing, kindly mention this Journal.)

IN most cities there are possibilities for considerable profitable

Outdoor Lighting

during the summer months. Any gas company can get a good share of this business with the aid of the

Humphrey Outdoor Lamp.

To those who have not looked into the proposition the large amount of money paid over to the electric companies for this class of service will prove surprising.

GENERAL GAS LIGHT CO.,
KALAMAZOO, MICH.

NEW YORK: 46 West Broadway.
SAN FRANCISCO: 530 Market St.

The "Air-Light"

Premier Burner Of America.

GENUINE "AIR-LIGHTS,"
A NEW BURNER FOR 1905.
AGENTS WANTED EVERYWHERE.
Increased in Value. Decreased in Price.
A High-Class Burner, a Rapid Seller, and a Money Maker for Agents, Dealers, Gas Companies, etc.

DENAYROUZE TRADE MARK AIR-LIGHT REGISTERED PAT. 673,705 MAY 7 1901

CENTRAL LIGHTING CO., 86 Warren Street, New York, N. Y.

Write or Call for Prices and Particulars.

THE AMERICAN STANDARD COMPOSITION CO.
—MANUFACTURES—
HEAT PROOF AND DAMP PROOF PAINTS
For Structural Iron and Steel, Gas Apparatus, Underground Piping, Boiler Fronts, Stacks, etc.
Our Paints will not crack, peel or scale. Heat does not affect them. They are moisture proof.
They are the Paints that Don't Come Off!
We let you Try before you Buy. Send for samples and prices.
AMERICAN STANDARD COMPOSITION COMPANY,
1707, Wall Street Exchange Building, New York.

THE
GAS MACHINERY
— CO. —
MAIN OFFICE AND SHOPS
CLEVELAND, O.
N.Y. OFFICE 56 PINE ST
J.A. MAYERS
REPRESENTATIVE
COAL & WATER GAS
APPARATUS.
PURIFIERS, VALVES.
CONNECTIONS.
ROTARY SCRUBBERS.
WASHERS.
BY-PRODUCT MACHINERY.
COMPLETE GAS PLANTS.

PATENTS, TRADE MARKS, COPYRIGHTS.

ROYAL E. BURNHAM,

Solicitor of Patents and Counsellor in Patent Causes.

833 Bond Building, Washington, D. C

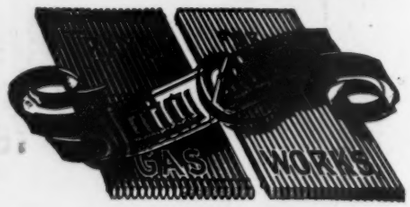
Send for Pamphlet on Patents.

1448-tf

Church's Patent Trays.

Reversible; Strongest; Most Easily Repaired.

Special Trays for Iron Sponge.



1412-1416 Adams Street, Hoboken, N. J.

We also Supply the Cheapest and Strongest

•Reversible Bolted Trays•

IN THE MARKET.

SEND FOR BOOKLET AND CIRCULARS.

Telpherage

Is the electrically operated, or trolley, system of transporting materials of whatever nature or size. Where no other method is possible, Telpherage overcomes the difficulty. It conveys over streets, driveways, railroad tracks, rivers, valleys, alongside precipitous cliffs or mountains, on straight lines or curves, or on any degree of incline. It brings into close communication the several departments of industrial establishments, and for relieving a freight-congested yard, depot, wharf or warehouse, is the best method in existence. We invite questions.

UNITED TELPHERAGE DEPARTMENT,
Dodge Coal Storage Company.

PHILADELPHIA: Nicetown. NEW YORK: 49 Dey St, PITTSBURGH: 1501-1502 Park Bldg. BOSTON: 164 Federal St. PORTLAND, ORE.: 309 McKay Bldg.

Bristol's Recording

PRESSURE GAUGE.

For continuous records of **Street Gas Pressure.**

Simple in construction, accurate in operation and low in price

Fully Guaranteed. Send for Circulars.

THE BRISTOL CO.,

Waterbury, Conn.

Gold Medal, St. Louis Exposition.

THE BEST are THE CHEAPEST.

HOMOGENEOUS CONSTRUCTION ~ PERFECT FINISH ~ LONGEST CONTINUOUS LIFE.

WE HAVE RETORTS MAKING GAS TO-DAY THAT HAVE BEEN IN CONSTANT USE FOR 52 MONTHS.

Awarded the Only **GRAND PRIZES** At St. Louis Exposition

BY A JURY COMPOSED OF THE MOST COMPETENT ENGINEERS OF FOUR CONTINENTS, FOR SUPERIOR

RETORTS * GAS BENCHES * FIREBRICK.

Designs and Estimates Cheerfully Furnished.

LACLEDE FIREBRICK MANUFACTURING COMPANY,

ST. LOUIS, MO.

You can buy burners that cost less than

BRAY BURNERS,

But all you save on the first cost will be lost a hundred times over in the increased number of complaints and dissatisfied consumers.

DON'T PUT GOOD GAS IN THE HOLDER AND SPOIL IT AT THE BURNER.

BRAY BURNERS

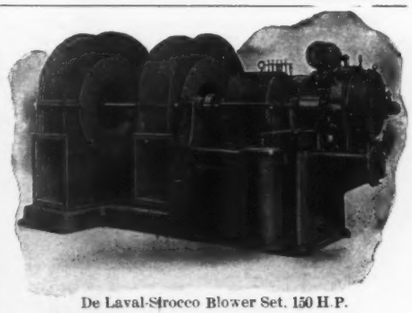
Have been used by the largest Gas Companies for over forty years, because

THE PROGRESSIVE GAS MAN ONLY WANTS THE BEST.

W. M. CRANE COMPANY,

NEW YORK,

Have you a Bray Blue Book? SOLE AGENTS FOR THE UNITED STATES.



De Laval-Strocco Blower Set. 150 H.P.

Steam Turbine Motors
Steam Turbine Dynamos
Steam Turbine Blowers
Steam Turbine Centrifugal Pumps
Electro-Motor Centrifugal Pumps

SEND FOR CATALOGUE.

REPRESENTATIVES:

D'Olier Engineering Co.,	New York City, Philadelphia, Pa.
Chas. Garrison,	Boston, Mass.
The Turbine Engineering Co.,	New York City, Chicago, Ill.
Denver Engineering Works Co.,	Denver, Col.
Florida Electric Co.,	Jacksonville, Florida.
Dravo, Doyle & Co.,	Pittsburg, Pa.
Geo. P. Dravo,	Milwaukee, Wis.
Chester B. Davis,	Dallas, Texas.
Joshua Hendy Machine Works,	San Francisco, Cal.
Kinbourne & Clark Co.,	Seattle, Wash.

DE LAVAL STEAM TURBINE COMPANY
Works and Sales Offices, TRENTON, N. J.

THE

Ludlow Valve Mfg. Co.,

TROY, N. Y., U. S. A.

Double and Single Gate Valves, ¼" to 72",

—FOR—

Gas, Water, Steam, Oil, Ammonia, Etc.

HOT GAS VALVES A SPECIALTY.

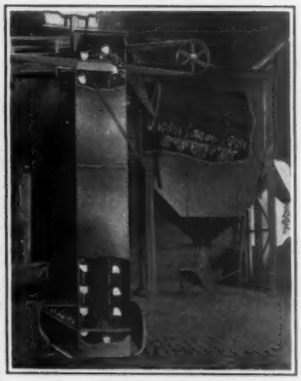
Send for Catalogue.

COAL TUBS.

Self-Dumping and Self-Righting coal tubs with **extra large wheels.** Six sizes kept in stock for prompt delivery.

C. W. Hunt Company,

BODINE STREET, WEST NEW BRIGHTON, N. Y.



Reclaiming Coke From Ashes.

Antiquated methods won't do the work of an up-to-date gas plant. The illustration shows a modern elevating and conveying outfit installed by us for the Mutual Gas Light Co., New York City.

"We claim intelligent application of well-known appliances in novel and original ways to solve problems." Write us.

THE LINK-BELT ENGINEERING CO.,
Philadelphia.

NEW YORK: 49 Dey St. *PITTSBURGH:* Park Bldg. *CHICAGO:* Link-Belt Machinery Co.

THE ECONOMICAL GAS APPARATUS CONSTRUCTION COMPANY, LIMITED,

Consulting Engineers.

Builders of UP-TO-DATE Machinery and Appliances for Coal and Water Gas Plants. :: :: :: :: ::

PLANS, SPECIFICATIONS AND ESTIMATES PREPARED.

AMERICAN OFFICE:
269 Front St., East, Toronto, Canada.

EMPIRE GAS IMPROVEMENT AND CONSTRUCTION CO.

This Company has purchased the patents and goodwill in the business hitherto carried on and owned by *A. M. Sutherland.* It is now ready to contract for the erection and installation of

ENTIRE GAS WORKS,

or any separate portion of the same, such as **Gasholders, Coal Gas Benches, Lowe-Sutherland** double-superheater **Water Gas Sets,** Scrubbers, Condensers, Exhausters, Purifying Boxes, Street Governors, Street Mains and Main Laying.

The high character of the work done by A. M. Sutherland during the past 15 years will be strictly adhered to and all work is warranted.

Mr. Sutherland remains with the Company for two years President and Director, and will give personal attention to contracts.

EMPIRE GAS IMPROVEMENT AND CONSTRUCTION CO., 49 Wall St., New York.

IMMERSION WASHERS.

A design embodying particularly desirable features.

LLOYD CONSTRUCTION COMPANY,

Western Sales Agents for
BARTLETT, HAYWARD & CO., Baltimore, Md.

DETROIT, MICH.

MUELLER GAS COCKS.

SPECIAL GRADE SERVICE COCK.

C—1146.

A bulky looking gas cock does not necessarily mean a strong cock; this is more a matter of the character of the metal and where it is placed.

Mueller Gas Cocks not only have the bulk to indicate strength, but they are made of fine grained red brass so distributed by design that they have as much strength as they appear to have. They are strong in fact as well as in appearance.

Mueller Gas Cocks are made in straight, oval and round way patterns. Straight way cocks are made in standard, extra and special grades. the oval way cocks in the extra grade only, and the round way cocks in the standard and extra grades. The cock illustrated is the special grade straight way cock.

Each cock is carefully inspected and assure test, bears the Mueller trade mark, and sembled, is given a 75-pound hydraulic pressis *unconditionally guaranteed.*

We also make tapping machines and melogues upon application. ter connections for gas works' use. Cata-

EASTERN DIVISION—Located at 254-258 Canal Street (cor. Elm). New York City, carries a full stock of Mueller goods.

THREE GRAND PRIZES were awarded Mueller Water, Gas and Plumbing goods, respectively, at St Louis.

H. MUELLER MFG. CO.,

DECATUR, ILL., U. S. A. NEW YORK, N. Y., U. S. A.

ROOTS' GAS EXHAUSTERS.

GOLD MEDAL AT ST. LOUIS, 1904.

Installation showing our latest improved machines, with flexible rope coupling, for large units.

SEND FOR CATALOGUE.

HOME OFFICE:
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ARTHUR E. BOARDMAN, C.E.,

For several years associated with the late
CAPTAIN WILLIAM HENRY WHITE,
WILL CONTINUE THE BUSINESS OF

CONSULTING ENGINEER

For Gas, Water and Electric Light Companies, at
No. 41 Wall Street, Room 1707, New York.
TELEPHONE, 5534 BROAD.

FRANK D. MOSES,

Telephone, 204-A TRENTON, N. J., Telephone, 204-A

Constructing Engineer and Contractor.

Estimates Furnished on any kind of Work in Connection with Gas or Water Plants.
SPECIAL ATTENTION GIVEN TO THE REMODELLING AND EXTENDING OF THE PROPERTIES OF WORKS NOT UP-TO-DATE.
CORRESPONDENCE SOLICITED.

GEORGE ORMROD, Mangr. & Treas., Emaus, Pa.
JOHN DONALDSON, Prest., Betz Bldg., Phila., Pa.

EMAUS PIPE FOUNDRY.

DONALDSON IRON COMPANY. EMAUS, PA.

CAST IRON GAS & WATER PIPE

MANUFACTURERS OF

CAST IRON PIPE AND SPECIAL CASTINGS

FOR WATER AND GAS.

Also, FLANGE PIPE, LAMP POSTS, Etc.

GAS TAPPING MACHINES

—FOR—

Drilling and Tapping Pipe under Pressure

WITHOUT ANY ESCAPE OF GAS.

They are Strong and Compact.

Size of Combination Drills and Taps ¾ to 4-inch.

Machines Sent to any Gas Company for Thirty Days' Trial.

Send for Circulars.

Geo. Light,
DAYTON, O.

MUELLER COMBINATION TAPPING MACHINE.

C—1092.

The Mueller "Combination" Tapping Machine can be used with the gas cylinder for tapping under pressure, or without it for dry pipe tapping. This interchangeable feature makes it a very valuable tool for plants having both kinds of work to do with a small allowance for tools. Makes dry taps up to 3-inch and pressure taps up to 2-inch. Unconditionally guaranteed. Catalogues upon application.

H. MUELLER MFG. CO.,
Decatur, Ill., U. S. A. New York, N. Y., U. S. A.

"THE MINER"
Globe Street and Boulevard Lamps.
Cheapest and Best
THOUSANDS IN USE WITH INCANDESCENT BURNERS.
Send for Catalogues.
THOMAS T. W. MINER,
821-823 Eagle Av., N. Y.

GASHOLDER TANKS AND GAS WORKS MASONRY COMPLETE.

Plans prepared and Estimates furnished at short notice.

J. P. WHITTIER,
238 Java Street, Brooklyn, N. Y.

WARREN FOUNDRY AND MACHINE CO.,

Established 1856. Works at Phillipsburgh, N. J.

New York Office, 160 Broadway.

CAST IRON WATER AND GAS PIPE,

FROM THREE TO FORTY-EIGHT INCHES DIAMETER. ALSO, ALL SIZES OF

Flange Pipe for Sugar House and Mine Work. Branches, Bends, Retorts, etc., etc.

CHARLES MILLAR & SON CO., Selling Agents, Utica, N. Y.

Flanged Pipe and Fittings, Hydrants, Gates, Pig Lead, etc., etc.

UTICA PIPE FOUNDRY CO.

Manufacturers of Lead Pipe, Solder, etc.; and Jobbers of Plumbers' and Tinners' Goods.

CAST IRON PIPE and SPECIALS FOR WATER AND GAS.

Wholesale Eastern Agents AKRON VITRIFIED SEWER PIPE.

SAFETY GAS MAIN STOPPER COMPANY,

For Shutting Off Gas in Mains

Any size gas main can be shut off in 30 seconds. : : :

Temporarily during alterations and repairs. : : : :

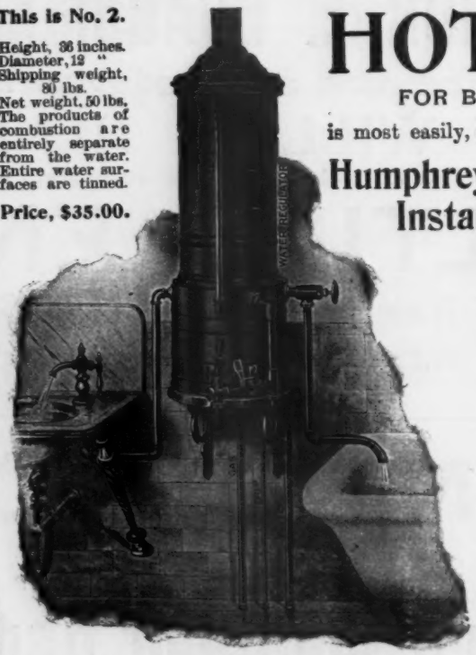
STOPPERS SENT ON TRIAL.

Address: SAFETY GAS MAIN STOPPER CO., 1668 Park Ave., New York City.

This is No. 2.

Height, 36 inches.
Diameter, 12 "
Shipping weight, 80 lbs.
Net weight, 50 lbs.
The products of combustion are entirely separate from the water. Entire water surfaces are tinned.

Price, $35.00.



HOT WATER

FOR BATHROOM AND KITCHEN

is most easily, quickly and economically supplied by a

Humphrey Crescent Instantaneous Water Heater.

Prices range from $20 to $45.
Every Heater GUARANTEED.

Set a heater for every gas consumer. You will please them and increase sale of gas at the same time.

Send to day for catalogue and discounts to

HUMPHREY CO.,
Kalamazoo, Mich.,

The only manufacturers in the World of a COMPLETE LINE OF INSTANTANEOUS WATER HEATERS.

GEORGE R. ROWLAND,
Formerly with the Continental Iron Works.
Draughtsman and Constructing Engineer.

Drawings, Specifications and Estimates furnished for the construction of new works or alteration of old works. Special attention given to Patent Office drawings.

Office, No. 245 Broadway, N. Y. City.

J. F. W. JOST,
CHEMICAL ENGINEER
—IN—
GAS MANUFACTURE,
P. O. BOX 2643, PHILADELPHIA, PA.

AMERICAN METER CO.,

NEW YORK, ST. LOUIS, PHILADELPHIA, SAN FRANCISCO, CHICAGO,

Photometrical and Experimental Apparatus.

PUBLIC LIGHTING TABLE.

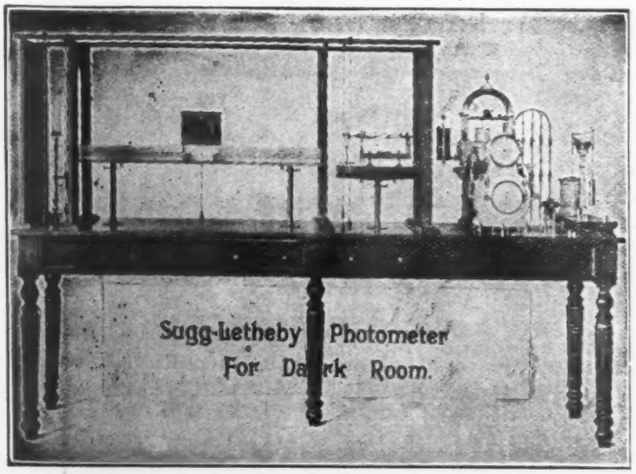
AUGUST, 1905.

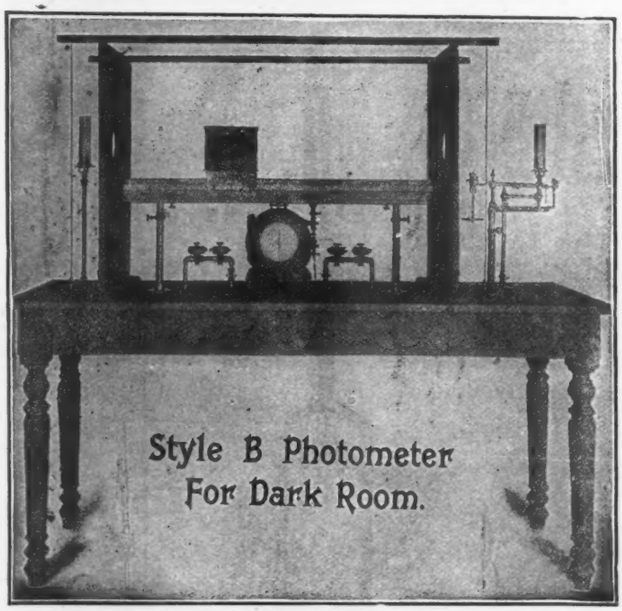
Day of Week.	Date.	Table No. 1. FOLLOWING THE MOON. Light.	Extinguish.
Tue.	1	7.40 PM	4.00 AM
Wed.	2	7.40	4.00
Thu.	3	7.40	4.00
Fri.	4	7.40	4.00
Sat.	5	9.10	4.00
Sun.	6	9.40	4.10
Mon.	7	10.20 FQ	4.10
Tue.	8	11.00	4.10
Wed.	9	11.50	4.10
Thu.	10	12.40 AM	4.10
Fri.	11	1.30	4.10
Sat.	12	2.30	4.10
Sun.	13	No L.	No L.
Mon.	14	No L. FM	No L.
Tue.	15	No L.	No L.
Wed.	16	7.30 PM	8.50 PM
Thu.	17	7.30	9.20
Fri.	18	7.30	9.50
Sat.	19	7.30	10.20
Sun.	20	7.20	10.50
Mon.	21	7.20	11.20
Tue.	22	7.20 LQ	12.00
Wed.	23	7.20	12.30 AM
Thu.	24	7.20	1.20
Fri.	25	7.20	2.10
Sat.	26	7.20	3.00
Sun.	27	7.10	4.20
Mon.	28	7.10	4.20
Tue.	29	7.10	4.20
Wed.	30	7.10 NM	4.20
Thu.	31	7.10	4.20

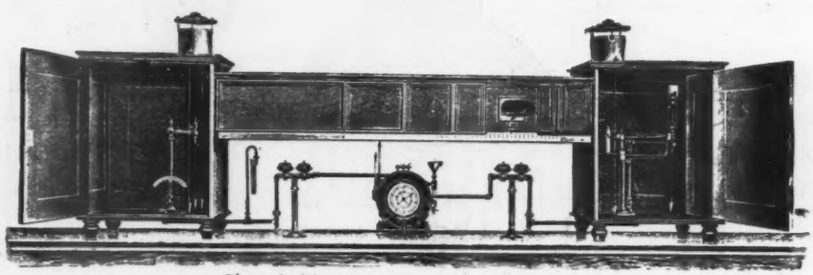
TOTAL HOURS DURING 1905.

By Table No. 1.

	Hrs.Min.
January	240.50
February	192.20
March	207.00
April	175.10
May	161.00
June	139.50
July	149.00
August	161.50
September	173.00
October	205.00
November	211.00
December	229.00
Total, yr.	2245.00







Closed Photometer For Light Room.

CIRCULARS SENT ON REQUEST.

PUBLIC LIGHTING TABLE.

AUGUST, 1905.

Day of Week.	Date.	Table No. 2. NEW YORK CITY. All Night Lighting. Light	Extinguish.
		P.M.	A.M.
Tue.	1	7.10	3.30
Wed.	2	7.10	3.30
Thu.	3	7.10	3.30
Fri.	4	7.10	3.30
Sat.	5	7.10	3.30
Sun.	6	7.10	3.45
Mon.	7	7.10	3.45
Tue.	8	7.10	3.45
Wed.	9	7.10	3.45
Thu.	10	7.10	3.45
Fri.	11	7.10	3.45
Sat.	12	7.10	3.45
Sun.	13	6.55	4.00
Mon.	14	6.55	4.00
Tue.	15	6.55	4.00
Wed.	16	6.55	4.00
Thu.	17	6.55	4.00
Fri.	18	6.55	4.00
Sat.	19	6.55	4.00
Sun.	20	6.45	4.10
Mon.	21	6.45	4.10
Tue.	22	6.45	4.10
Wed.	23	6.45	4.10
Thu.	24	6.45	4.10
Fri.	25	6.45	4.10
Sat.	26	6.45	4.10
Sun.	27	6.30	4.20
Mon.	28	6.30	4.20
Tue.	29	6.30	4.20
Wed.	30	6.30	4.20
Thu.	31	6.30	4.20

TOTAL HOURS DURING 1905.

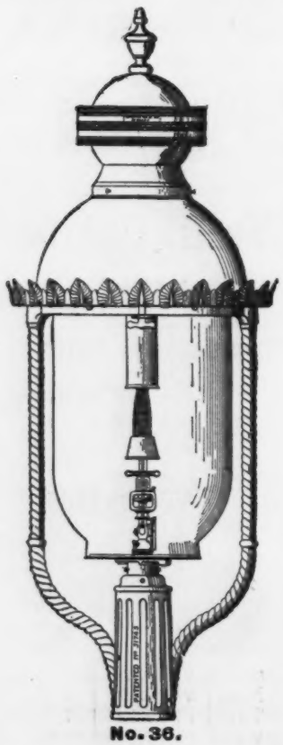
By Table No. 2.

	Hrs.Min.
January	423.20
February	355.25
March	355.35
April	298.50
May	264.50
June	234.25
July	243.45
August	280.25
September	321.15
October	374.30
November	401.40
December	433.45
Total, yr.	3987.45

NEW YORK, 97 Liberty Street. BOSTON, 814 Beacon Building. PHILADELPHIA, Broad and Arch Streets. ST. LOUIS, 712 Roe Building. CHICAGO, Foot of Orleans Street. SAN FRANCISCO, 712 Polk Street.

WELSBACH STREET LIGHTING COMPANY

.... OF AMERICA ....



No. 36.

Controls and Operates the

Welsbach System of Street Lighting,

Which includes its specially DESIGNED AND PATENTED BURNER for STREET and PARK LIGHTING exclusively.

Uniformly SUCCESSFUL in 150 Cities and Towns.

By means of the Welsbach System of street lighting the superiority of GAS over electricity for street lighting has been fully demonstrated.

POINTS OF MERIT:

It is { Economical, Attractive, Successful, Up-to-date.

IT LIGHTS THE STREET.

Where there are no gas mains we can furnish an equally good light by our SELF-GENERATING NAPHTHA WELSBACH BURNER, and thereby supply a uniform light in all localities.

Correspondence Solicited from Gas Companies and Others interested in Municipal and Outside Lighting.

No. 38.

The Welsbach No. 6 Harp Fixture.

AN IDEAL LIGHT FOR DINING OR LIVING ROOMS.

THE HIGHEST MECHANICAL INGENUITY COMBINED WITH ORNAMENTAL BEAUTY--THE NEWEST OUTPUT FROM THE WELSBACH FACTORIES.

Equipped with new model No. 66 high candle power Welsbach Burner.

Side Pilot By-pass Tube covered with refractory sleeve to prevent bending.

Fourteen-inch Opal Dome Shade.

Polished Brass Embossed Crown 2¼ inches high.

Length of Fixture, 30 inches.

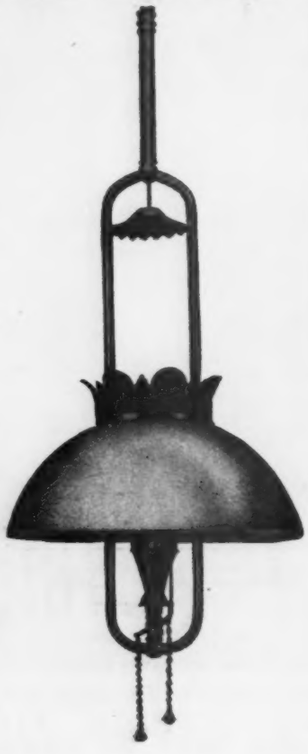
Width of Harp, 4½ inches.

Finished in Polished Brass.

Packed One Dozen to the Case.

List Price, per Dozen, $45.00.

We recommend equipping the No. 6 Harp Fixture with No. 4197 Intensive Brand Mantle, and the No. 306 **F. Q. M.** Clear Glass Air-Hole Cylinder.



Although the 14-inch Opal Dome Shade is standard equipment, we are prepared to furnish Dome Shades in green, pink or yellow (opal lined), and will be glad to quote prices.

WELSBACH CO.,

Salesrooms in all the principal cities of the United States.

Factories:
GLOUCESTER, N. J.
CHICAGO, ILL.

THE UNITED GAS IMPROVEMENT COMPANY

For the Period Ending July 1st, 1905, has been Awarded Contracts for 32 Sets of

Standard Double-Superheater Lowe Water Gas Apparatus.

PARTIAL LIST OF PLACES:

Catasauqua, Pa.	**Hempstead, N. Y.** (2d contract).	**Amsterdam, N. Y.**
Plattsmouth, Neb.	**Lansdale, Pa.**	**Houston, Tex.** (2d contract).
Detroit, Mich. (2d contract).	**New Britain, Conn.**	**Hamilton, O.** (2d contract).
Springfield, Ills.	**Ludington, Mich.**	**Indianapolis, Ind.** (2d contract).
Oneonta, N. Y. (2d contract).	**New York,** Mutual Co. (2d contract).	**Hazleton, Pa.**
Pottsville, Pa. (2d contract).	**St. Louis, Mo.** (4th contract).	**Mahanoy City, Pa.**
Evansville, Ind. (2d contract).	**Sioux City, Ia.** (3d contract).	**Nanticoke, Pa.**

TOTAL SETS TO JULY 1ST, 1905, ... 585
TOTAL DAILY CAPACITY TO JULY 1ST, 1905, . 455,980,000 CU. FT.

The United Gas Improvement Company,

Broad and Arch Streets, Philadelphia.

Established 1858. Incorporated 1890.
CHAS. E. GREGORY, Prest. DAVID R. DALY, V.-Prest. & Treas.
H. D. ABERNETHY, Sec.

J. H. Gautier & Co.

Greene & Essex Streets,
Jersey City, N. J.

MANUFACTURERS OF

CLAY GAS RETORTS, FIRE CLAY TILES, FIRE BRICK and FIRE CLAY SPECIALTIES.

Ground Fire Clay, Fire Sand and Ground Fire Brick in Barrels and Bulk.

SOLE MANUFACTURERS OF THE

FLEMMING GENERATOR GAS FURNACE

Brooklyn Fire Brick Works,

OFFICE AND WORKS:
88 VAN DYKE ST., BROOKLYN, N. Y.
MANUFACTURERS OF

CLAY GAS RETORTS & SETTINGS, GENERATOR LININGS. SPECIALTIES.

NATIONAL PYROGRANIT COMPANY,

MANUFACTURERS OF

Fire Brick, Tiles, Special Shapes, etc.

NEW YORK OFFICE:
17 Battery Place, New York.

WORKS:
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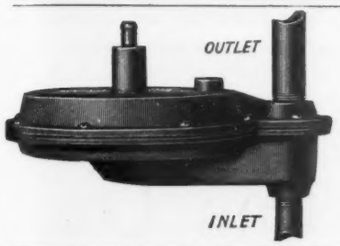

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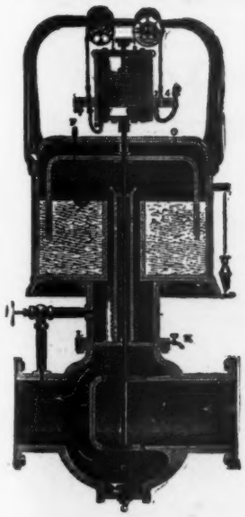

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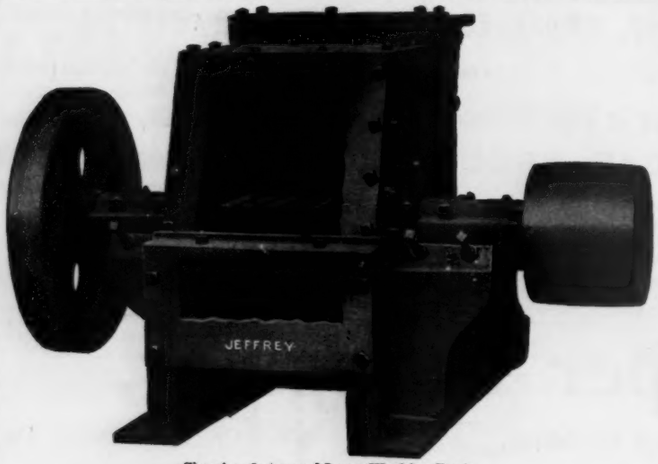

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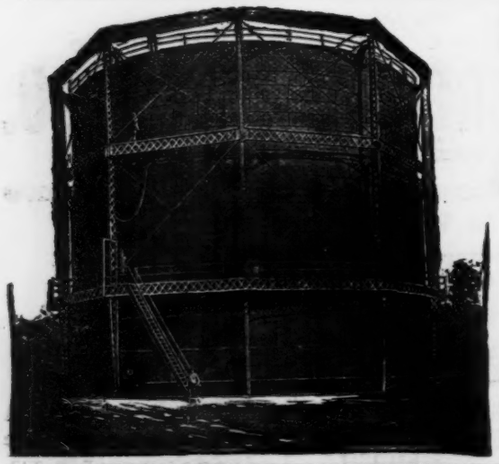

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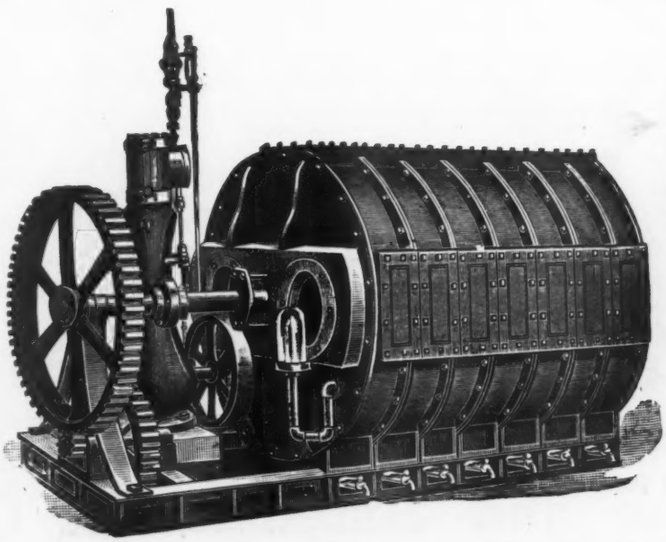

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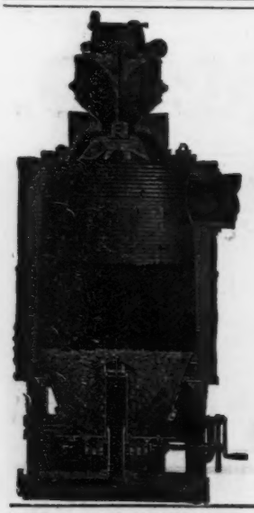

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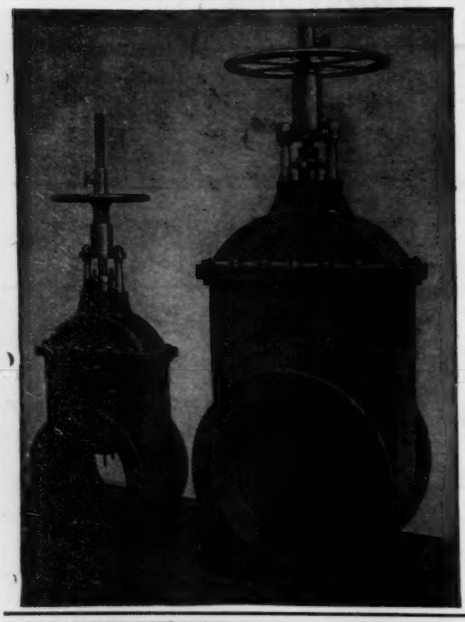

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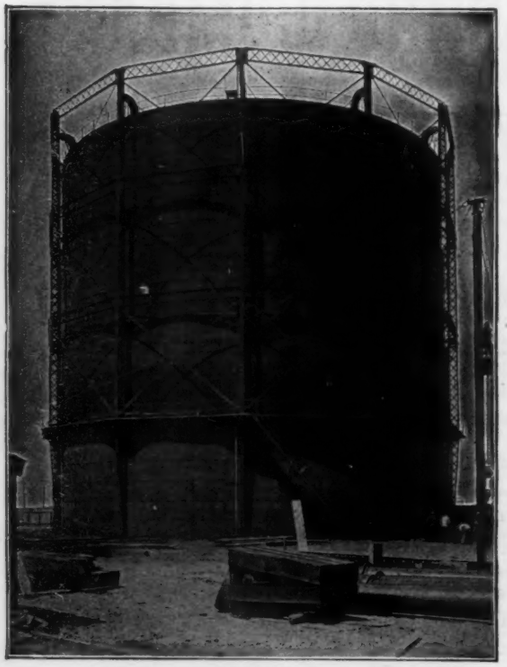

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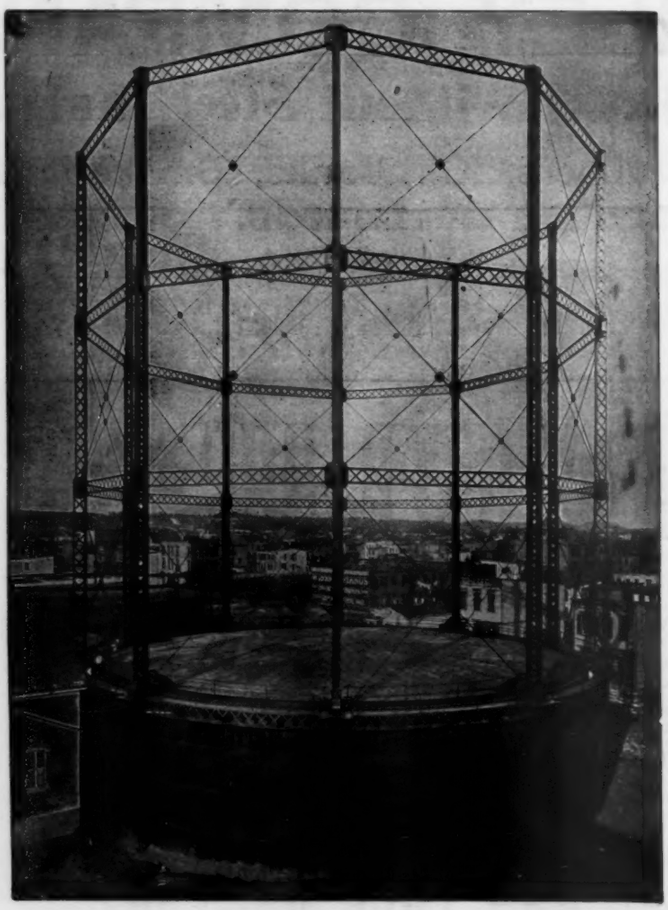

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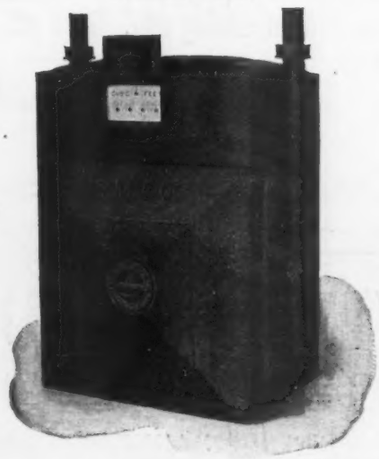

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